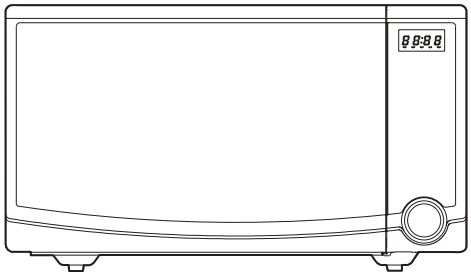
S/M No. : OR164H9001

Service Manual

Microwave Oven

Model : KOR-178HW
KOR-178HS



• Caution:
In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (http://svc.dwe.co.kr).

Jul. 2009

DAEWOO ELECTRONICS

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY

(a) Do not operate or allow the oven to be operated with the door open.

(b) Make the following safety checks on all ovens to be serviced before activating the magnetron or other microwave source, and make repairs if necessary: (1) Interlock operation, (2) Proper door closing, (3) Seal and sealing surfaces (arcing, wear, and other damage), (4) Damage to or loosening of hinges and latches (5) Evidence of dropping or abuse.

(c) Before turning on power to the microwave oven for any service test or inspection within the microwave generating compartments, check the magnetron, wave guide or transmission line, and cavity for proper alignment, integrity, and connections.

(d) Any defective or misadjusted components in the interlock, monitor, door seal and microwave generation and transmission systems shall be repaired, replaced, or adjusted by procedures described in this manual before the oven is released to the owner.

(e) A microwave leakage check to verify compliance with the Federal performance standard should be performed on each oven prior to release to the owner.

TABLE OF CONTENTS

PRECAUTIONS TO BE OBSERVED BEFORE AND DURING SERVICING TO AVOID POSSIBLE EXPOSURE TO EXCESSIVE MICROWAVE ENERGY 1
SAFETY AND PRECAUTIONS 2
1. FOR SAFE OPERATION 2
2. FOR SAFE SERVICE PROCEDURES 2
SPECIFICATIONS 3
EXTERNAL VIEW 4
1. OUTER DIMENSION 4
2. FEATURE DIAGRAM 6
3. CONTROL PANEL 9
INSTALLATION 15
OPERATIONS AND FUNCTIONS 16
DISASSEMBLY AND ASSMBLY 17
INTERLOCK MECHANISM AND ADJUSTMENT 28
TROUBLE SHOOTING GUIDE 29
MESUREMENT AND TEST 33
1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT 33
2. MICROWAVE RADIATION TEST 34
3. COMPONENT TEST PROCEDURE 35
WIRING DIAGRAM 36
PRINTED CIRCUIT BOARD 38
(1) KOR-162G/H0A, KOR-163G/H0A 38
(2) KOR-167HPA27, KOR-168H9A27 43
EXPLODED VIEW AND PARTS LIST 50
(1) KOR-162G/H0A, KOR-163G/H0A 50
(2) KOR-167HPA27, KOR-168H9A27 54

SAFETY AND PRECAUTIONS

CAUTION : This Device is to be Serviced Only by Properly Qualified Service Personnel. Consult the Service Manual for Proper Service Procedures to Assure Continued Safety Operation and for Precautions to be Taken to Avoid Possible Exposure to Excessive Microwave Energy.

1. FOR SAFE OPERATION

Damage that allows the microwave energy (that cooks or heats the food) to escape will result in poor cooking and may cause serious bodily injury to the operator.

IF ANY OF THE FOLLOWING CONDITIONS EXIST, OPERATOR MUST NOT USE THE APPLIANCE.

(Only a trained service personnel should make repairs.)

1) A broken door hinge.
2) A broken door viewing screen.
3) A broken front panel, oven cavity.
4) A loosened door lock.
5) A broken door lock.

The door gasket plate and oven cavity surface should be kept clean.

No grease, soil or spatter should be allowed to build up on these surfaces or inside the oven.

DO NOT ATTEMPT TO OPERATE THIS APPLIANCE WITH THE DOOR OPEN. The microwave oven has concealed switches to make sure the power is turned off when the door is opened. Do not attempt to defeat them.

DO NOT ATTEMPT TO SERVICE THIS APPLIANCE UNTIL YOU HAVE READ THIS SERVICE MANUAL.

2. FOR SAFE SERVICE PROCEDURES

1) If the oven is operative prior to servicing, a microwave emission check should be performed prior to servicing the oven.
2) If any certified oven unit is found to servicing, a microwave emission check should be performed prior to servicing the oven.
   (a) inform the manufacturer, importer or assembler,
   (b) repair the unit at no cost to the owner,
   (c) attempt to ascertain the cause of the excessive leakage,
   (d) tell the owner of the unit not to use the unit until the oven has been brought into compliance.
3) If the oven operates with the door open, the service person should tell the user not to operate the oven and contact the manufacturer immediately.

CAUTION

MICROWAVE RADIATION

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON OR OTHER MICROWAVE GENERATING DEVICE IF IT IS IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUTPUT MICROWAVE CONNECTIONS. WAVEGUIDES FLANGES AND GASKETS MUST BE SECURED. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED.

SPECIFICATIONS

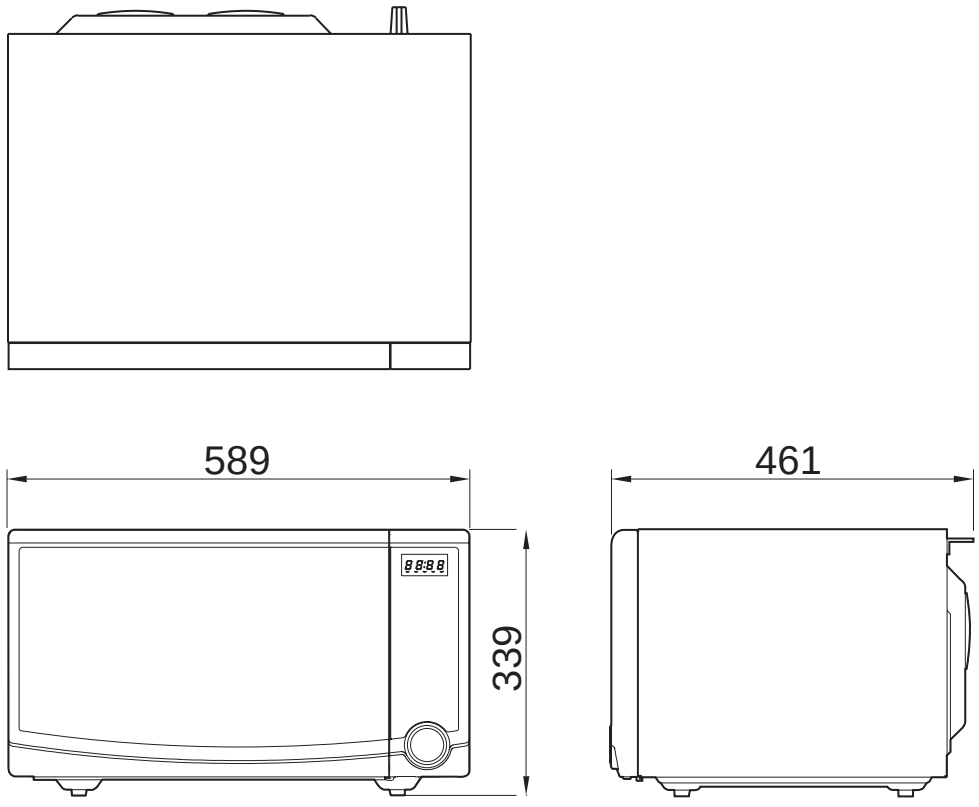
MODEL		KOR-178HW / KOR-178HS
POWER SUPPLY		127V~60Hz, SINGLE PHASE WITH EARTHING
POWER CONSUMPTION	MICROWAVE	1400 W
	GRILL	
	COMBINATION	
MICROWAVE ENERGY OUTPUT		1000 W
MICROWAVE FREQUENCY		2450 MHz
OUTSIDE DIMENSIONS (W X H X D)		589x339x461 mm (23.2x13.3x18.2 in.)
CAVITY DIMENSIONS (W X H X D)		399x263x426 mm (15.7x10.4x16.8 in.)
NET WEIGHT		APPROX. 17.0kg (37.5 lbs.)
TIMER		99 min. 99 sec.
FUNCTION SELECTIONS		MICROWAVE
POWER SELECTIONS		10 LEVELS
CAVITY VOLUME		1.6 Cu. Ft

** Specifications are subject to change without notice.*

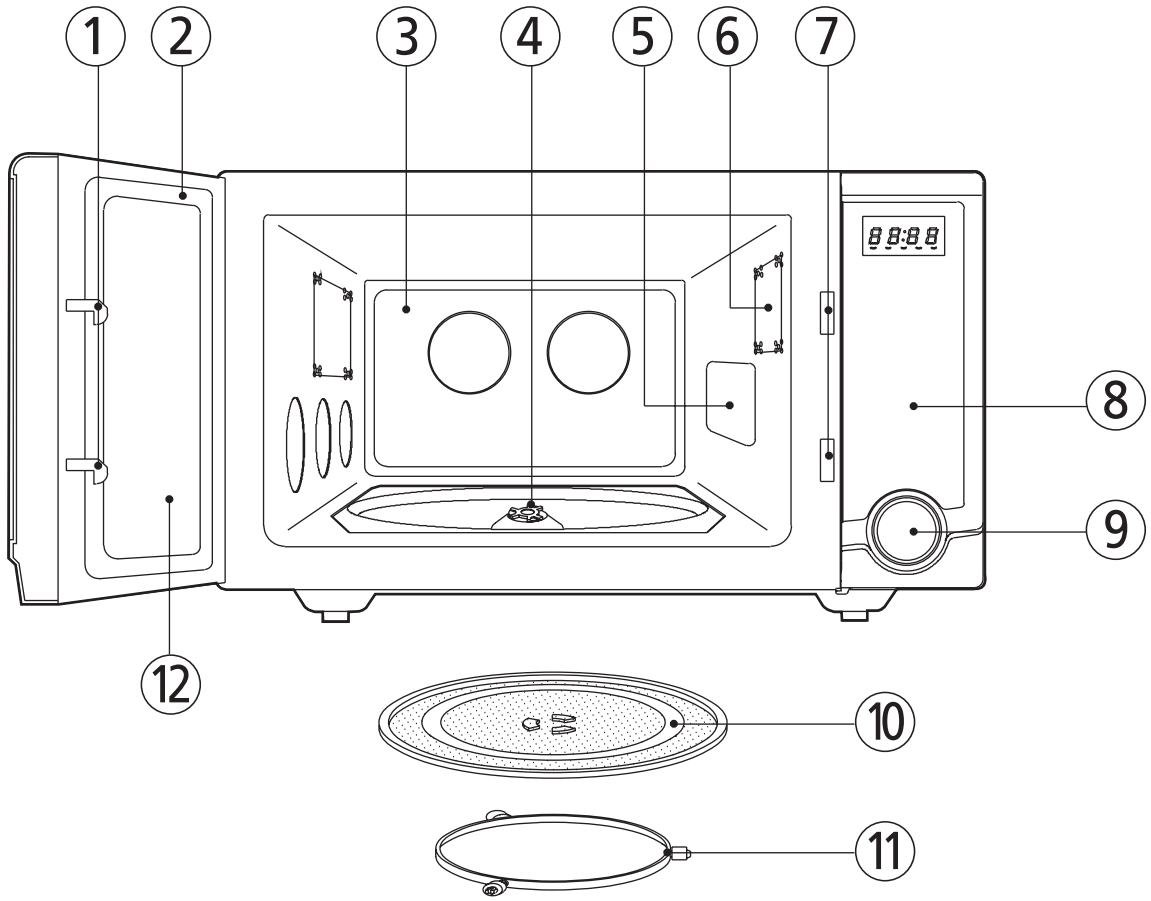
EXTERNAL VIEW

1. OUTER DIMENSION

KOR-178HW / KOR-178HS



KOR-178HW / KOR-178HS



① **Door latch -** When the door is closed, it will automatically shut off. If the door is opened while the oven is operating, the magnetron will automatically shut off.

② **Door seal -** The door seal surfaces prevent microwaves escaping from the oven cavity.

③ **Oven cavity**

④ **Coupler -** This fits over the shaft in the center of the oven cavity floor.
This is to remain in the oven for all cooking.

⑤ **Waveguide cover -** Protects the microwave outlet from splashes of cooking foods.

⑥ **Oven lamp -** Automatically turns on during oven operating.

⑦ **Safety interlock system**

⑧ **Control panel**

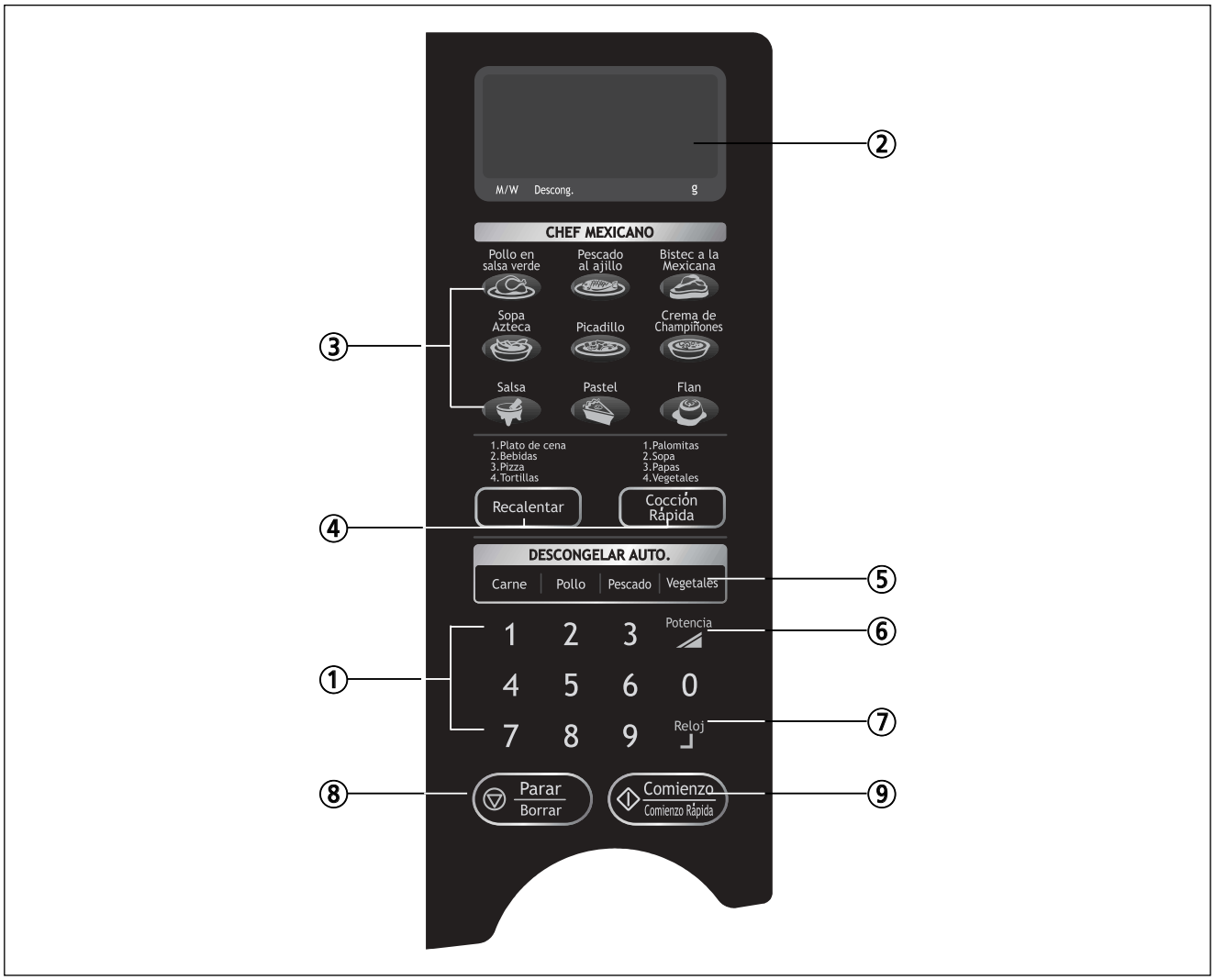
⑨ **Door open button -** To open the door push the door open button.

⑩ **Glass cooking tray -** Made of special heat resistant glass. The tray must always be in proper position before operating. Do not cook food directly on the tray.

⑪ **Roller guide -** This must always be used for cooking together with the glass cooking tray.

⑫ **Viewing screen -** Allows viewing of food.
The screen is designed so that light can pass through, but not the microwave.

KOR-178HW / KOR-178HS



① **Time set pad -** Used to set the cooking time and the present time.

② **Display -** Cooking time, power level, indicators and present time are displayed.

③ **One Touch Cook -** Used to cook specific quantities of food.

④ **Auto Cook -** Used to reheat or cook many of favorite foods.

⑤ **Auto Defrost -** Used to defrost foods. (for weight)

⑥ **Power -** Used to set power level.

⑦ **Clock -** Used to set clock.

⑧ **Stop/Clear -** Used to stop the oven operation or to delete the cooking data.

⑨ **Start/Speedy Cook -** Used to start the oven and also used to set a reheat time.

INSTALLATION

1. Steady, flat location

This microwave oven should be set on a steady, flat surface.

2. Leave space behind and side

All air vents should be kept a clearance. If all vents are covered during operation, the oven may overheat and, eventually, cause oven failure.

3. Away from Radio and TV sets

Poor television reception and radio interference may result if the oven is located close to a TV, Radio, antenna or feeder and so on.

4. Away from heating appliances and water taps

Keep the oven away from hot air, steam or splash when choosing a place to position it, or the insulation might be adversely affected and breakdowns occur.

5. Power supply

➢ Check your local power source.

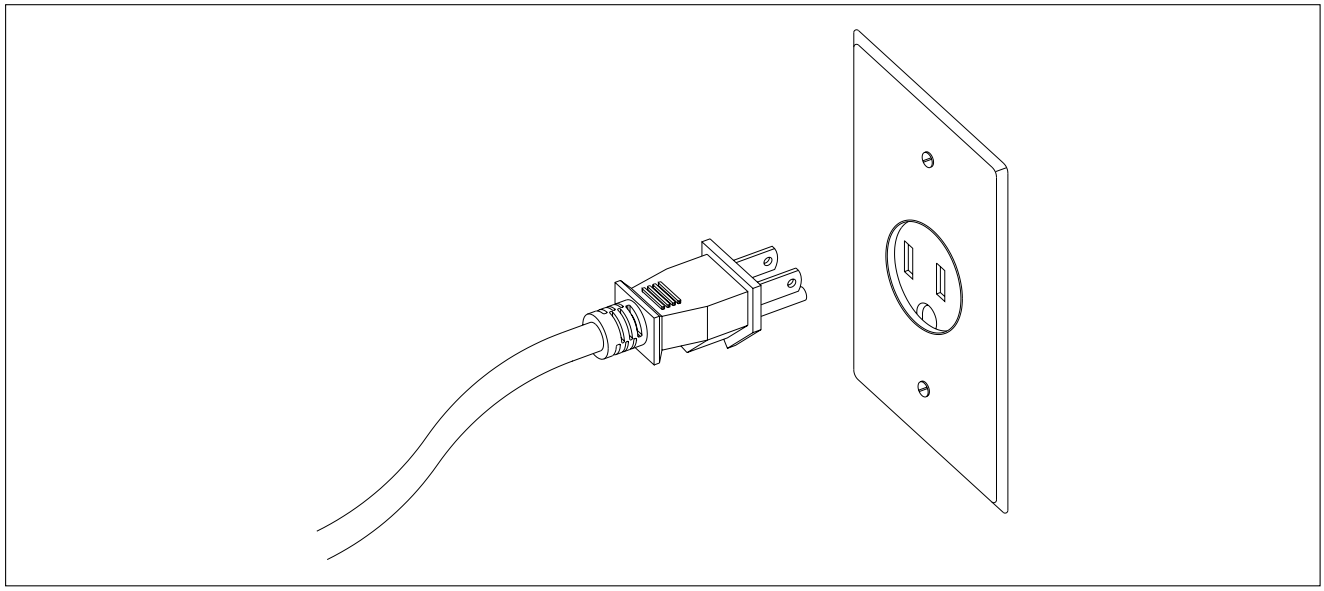
This microwave oven requires a current of approximately 12 amperes,

120Volts(KOR-162G0A/162H0A/163G0A/163H0A) or 127Volts(KOR-167H9A27/168H9A27), 60Hz grounded outlet.

➢ Line fuse rating is 20amperes and described on EXPLODED VIEW AND PART LIST.

➢ Power supply cord is about 1.0 meters long.

1. A short power-supply cord is provided to reduce the risks resulting from becoming entangled in or tripping over a longer cord.
2. Longer cord sets or extension cords are available and may be used if care is exercised in their use.
3. If a long cord or extension cord is used:
   1) The marked electrical rating of the cord set or extension cord should be at least as great as the electrical rating of the appliance.
   2) The extension cord must be a grounding type 3-wire cord.
   3) The longer cord should be arranged so that it will not drape over the counter top or tabletop where it can be pulled on by children or tripped over unintentionally.



6. Examine the oven after unpacking for any damage such as:

A misaligned door, broken door or a dent in cavity.

If any of the above are visible, DO NOT INSTALL, and notify dealer immediately.

OPERATIONS AND FUNCTIONS

1. Connect the mains lead to an electrical outlet.
2. After placing the food in a suitable container, open the oven door and put it on the glass tray. The glass tray must always be in place during cooking.
3. Close the door securely.
4. The oven door can be opened at any time during operation by pushing the door release button on the control panel. The oven will automatically shut off. To restart the oven, close the door and then touch START pad.
5. Each time a pad is touched, a BEEP will sound to acknowledge the touch.
6. The oven automatically cook on full power unless set to a lower power level.
7. The display will show : 0 when the oven is plugged in.
8. Time clock returns to the present time when the cooking time ends.
9. When the STOP/CLEAR pad is touched during the oven operation, the oven stops cooking and all information retained.
   To erase all information (except the present time), touch the STOP/CLEAR pad once more. If the oven door is opened during the oven operation, all information is retained.
10. If the START pad is touched and the oven does not operate, check the area between the door and door seal for obstructions and make sure the door is closed securely. The oven will not start cooking under the door is completely closed or the program has been reset.

Make sure the oven is properly installed and plugged into the electrical outlet.

Wattage output chart

The power level is set by touching the POWER pad. The chart shows the display, the power level and the percentage of power.

Touch POWER pad.	Power level(Display)	Approximate Percentage of Power
Once	P-HI	100%
Twice	P-90	90%
3 times	P-80	80%
4 times	P-70	70%
5 times	P-60	60%
6 times	P-50	50%
7 times	P-40	40%
8 times	P-30	30%
9 times	P-20	20%
10 times	P-10	10%
11 times	P-00	0%

DISASSEMBLY AND ASSEMBLY

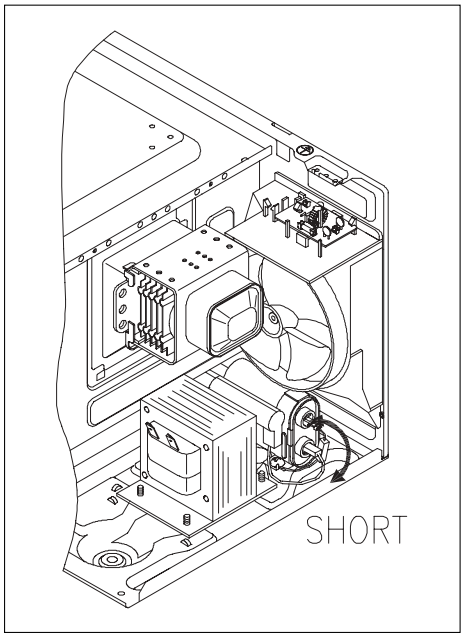
- Cautions to be observed when trouble shooting.

Unlike many other appliances, the microwave oven is high-voltage, high-current equipment. It is completely safe during normal operation. However, carelessness in servicing the oven can result in an electric shock or possible danger from a short circuit. You are asked to observe the following precautions carefully.

1. Always remove the power plug from the outlet before servicing.
2. Use an insulated screwdriver and wear rubber gloves when servicing the high voltage side.
3. Discharge the high voltage capacitor before touching any oven components or wiring.

(1) Check the grounding.
Do not operate on a two-wire extension cord.
The microwave oven is designed to be used while grounded.
It is imperative, therefore, to make sure it is grounded properly before beginning repair work.

(2) Warning about the electric charge in the high voltage capacitor.
For about 30 seconds after the operation has stopped, electric charge remains in the high voltage capacitor.
When replacing or checking parts, short between oven chassis and the negative high terminal of the high voltage capacitor by using a properly insulated screwdriver to discharge.



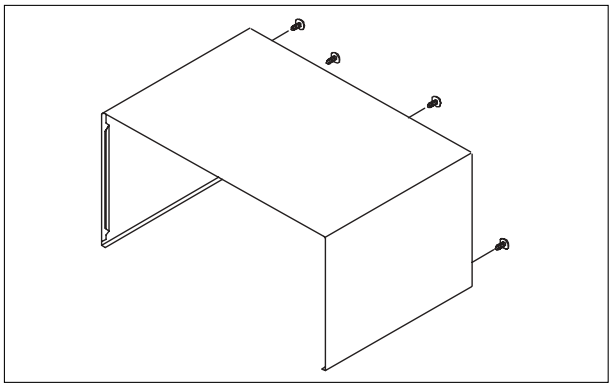
4. When the 20A fuse is blown due to the operation of the monitor switch; replace primary interlock switch, secondary interlock switch and interlock monitor switch.
5. After repair or replacement of parts, make sure that the screws are properly tightened, and all electrical connections are tightened.
6. Do not operate without cabinet.

CAUTION : Service personnel should remove their watches whenever working close to or replacing the magnetron.

CAUTION : When servicing the appliance, take care when touching or replacing high potential parts because of electrical shock or exposing microwave. These parts are as follows - HV Transformer, Magnetron, HV Capacitor.

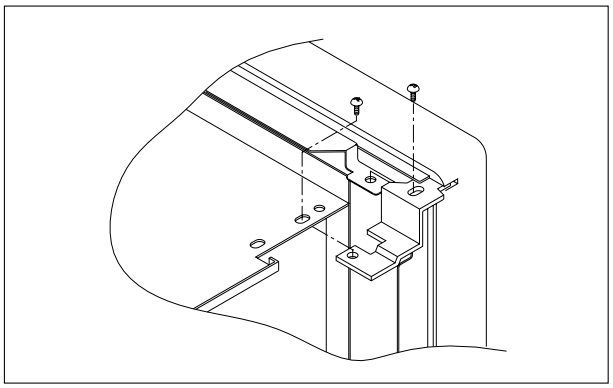
1. To remove cabinet

1) Remove four screws on cabinet back.
2) Pull the cabinet backward.



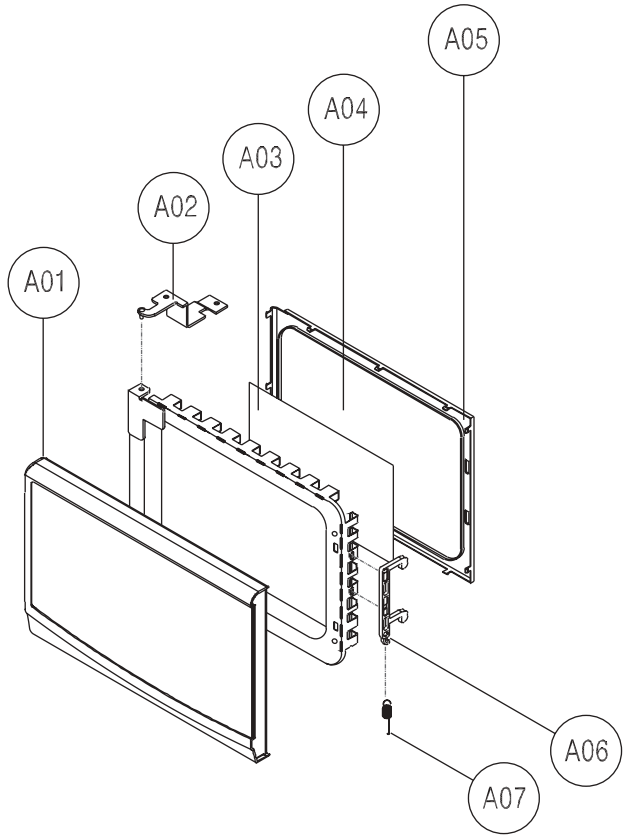
2. To remove door assembly

1) Remove two screws which secure the stopper hinge top.
2) Remove the door assembly from top plate of cavity.
3) Reverse the above for reassembly.



NOTE : After replacing the door assembly, perform a check of correct alignment with the hinge and cavity front plate.

KOR-178HW

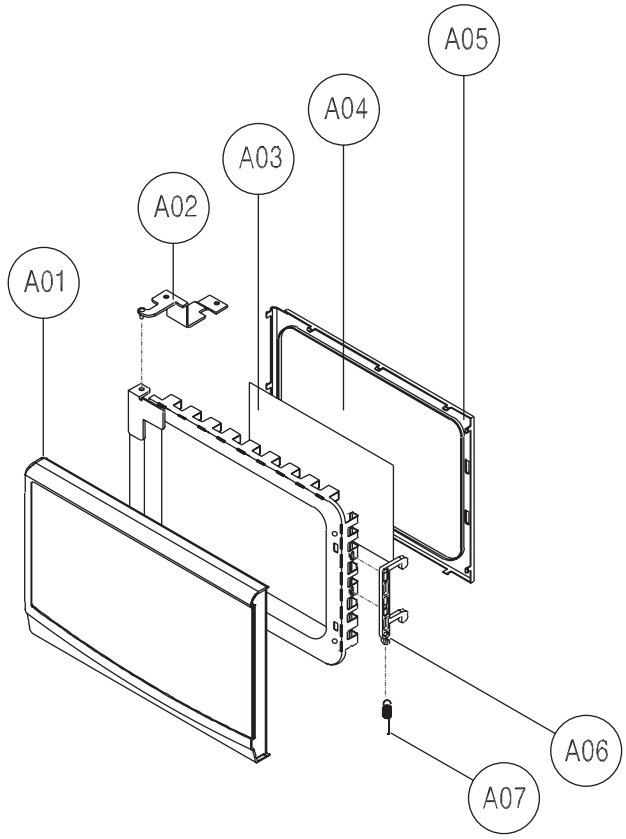


DOOR ASSEMBLY : 3511710540

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
A01	3512210900	FRAME DOOR	KOR-168H9A27 SILICON	1	
A02	3515204400	STOPPER HINGE *T AS	KOR-162J0A	1	
A03	3511710500	DOOR PAINTING AS	KOR-161H0A	1	
A04	3517005200	BARRIER SCREEN *I	PE T1.0	1	
A05	3512301800	GASKET DOOR	PP 5113MF6	1	
A06	3513100900	HOOK	POM	1	
A07	3515101900	SPRING	PW-1	1	

(1) Remove the gasket door from the door painting assembly.
(2) Remove the barrier screen inner from the door painting assembly.
(3) Remove the frame door from the door painting assembly.
(4) Remove the stopper hinge top assembly from the door painting assembly.
(5) Remove the spring hook and the hook from the door painting assembly.
(6) Reverse the above steps for reassembly.

KOR-178HS

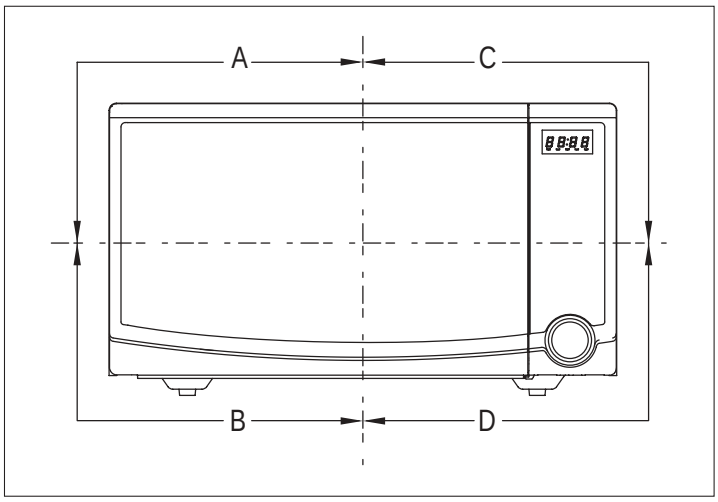


DOOR ASSEMBLY : 3511710550

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
A01	3512210910	FRAME DOOR	KOR-168H9A52 SILICON	1	
A02	3515204400	STOPPER HINGE *T AS	KOR-162J0A	1	
A03	3511710500	DOOR PAINTING AS	KOR-161H0A	1	
A04	3517005200	BARRIER SCREEN *I	PE T0.1	1	
A05	3512301800	GASKET DOOR	PP 5113MF6	1	
A06	3513100900	HOOK	POM	1	
A07	3515101900	SPRING	PW-1	1	

(1) Remove the gasket door from the door painting assembly.
(2) Remove the barrier screen inner from the door painting assembly.
(3) Remove the frame door from the door painting assembly.
(4) Remove the stopper hinge top assembly from the door painting assembly.
(5) Remove the spring hook and the hook from the door painting assembly.
(6) Reverse the above steps for reassembly.

4. Method to reduce the gap between the door seal and the oven front surface.



(1) To reduce gap located on part 'A'
- Loosen two screws on stopper hinge top, and then push the door to contact the door seal to oven front surface.
- Tighten two screws.

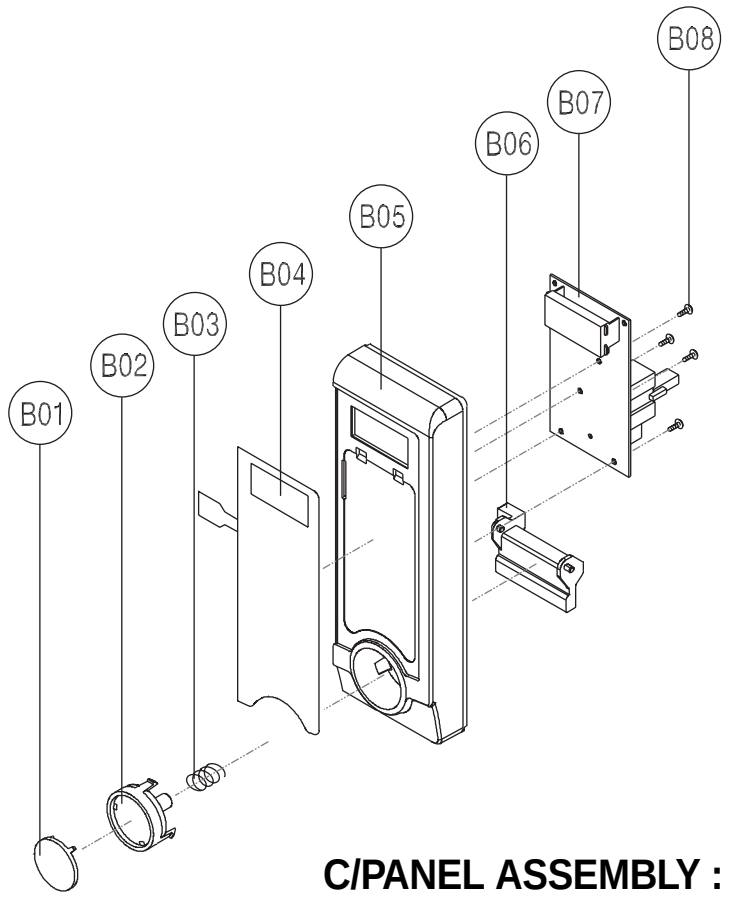
(2) To reduce gap located on part 'B'
- Loosen two screws on stopper hinge under, and then push the door to contact the door seal to oven front surface.
- Tighten two screws.

(3) To reduce gap located on part 'C'
- Loosen the screw on interlock switch assembly located top of oven body.
- Draw the interlock switch assembly inward as possible to engage with hook on the door bottom.
- Tighten a screw.

(4) To reduce gap located on part 'D'
- Loosen the screw on interlock switch assembly locate bottom of oven body and (4) are same as step(3).

NOTE : A small gap may be acceptable if the microwave leakage does not exceed 4mW/cm^2.

KOR-178HW

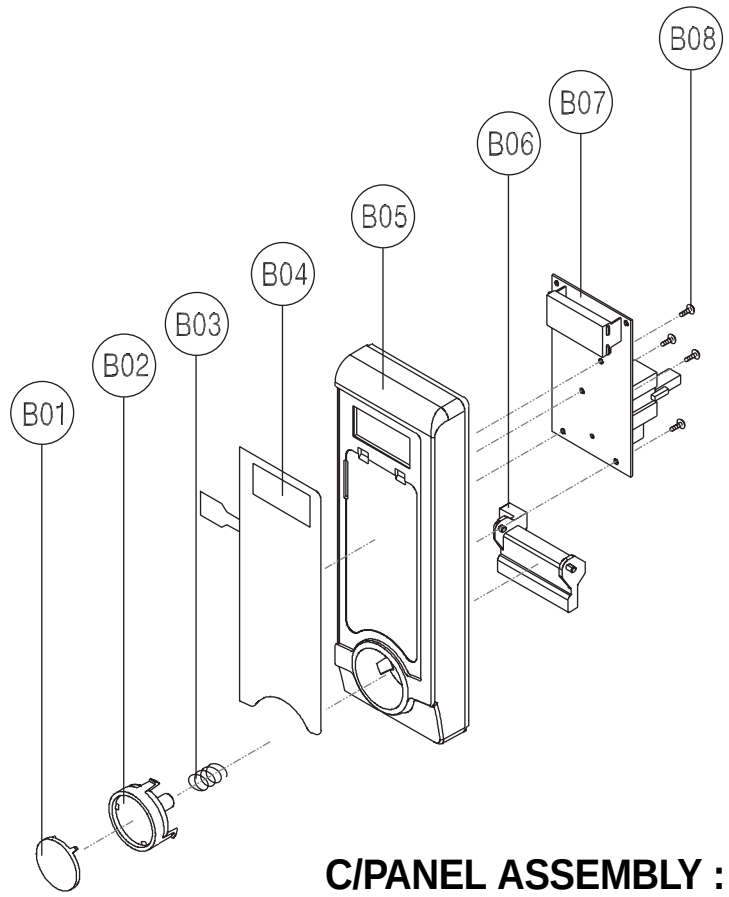


C/PANEL ASSEMBLY : PKCPSWXM10

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
B01	3511618320	DECORATOR BUTTON	ABS SG-0760D, SG-175 COATING	1	
B02	3516915960	BUTTON DOOR OPEN	ABS SG-0760D, SG-175	1	
B03	441G430171	SPRING BUTTON	SWP DIA. 0.7	1	
B04	3518573310	SWITCH MEMBRANE	KOR-168H9A27	1	
B05	3516738400	CONTROL PANEL	ABS SG-0760D, SG-175	1	
B06	3513702800	LEVER DOOR OPEN	PP	1	
B07	PKMPMSZZ20	PCB MAIN MANUAL AS	KOR-168H9A27	1	
B08	7122401211	SCREW TAPPING	T2 TRS 4X12 MFZN	4	

1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
2) Disconnect wire flat from the connector of the PCB assembly.
3) Remove four screws which secure the PCB assembly to control panel.
4) Remove the PCB from the control panel.
5) Remove the membrane, lever door open, spring button and button door open from the control panel.
6) Reverse the above steps for reassembly.

KOR-178HS



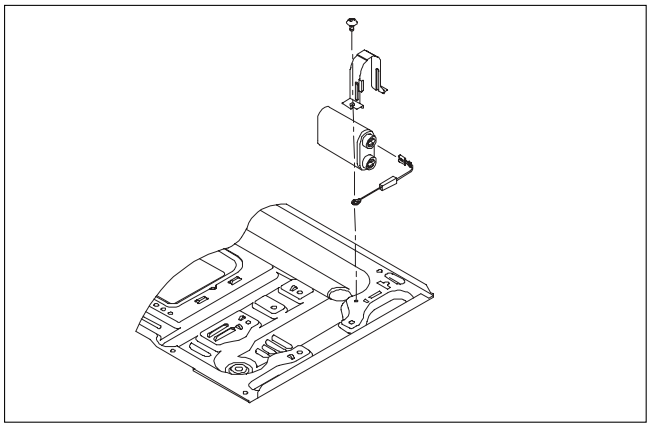
C/PANEL ASSEMBLY : PKCPSWXM40

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY	REMARK
B01	3511618320	DECORATOR BUTTON	ABS SG-0760D, SG-175 COATING	1	
B02	3516915970	BUTTON DOOR OPEN	ABS SG-0760D, SG-175 SPRAY	1	
B03	441G430171	SPRING BUTTON	SWP DIA. 0.7	1	
B04	3518573310	SWITCH MEMBRANE	KOR-168H9A27	1	
B05	3516738420	CONTROL PANEL	ABS SG-0760D, SG-175 SPRAY	1	
B06	3513702800	LEVER DOOR OPEN	PP	1	
B07	PKMPMSZZ20	PCB MAIN MANUAL AS	KOR-168H9A27	1	
B08	7122401211	SCREW TAPPING	T2 TRS 4X12 MFZN	4	

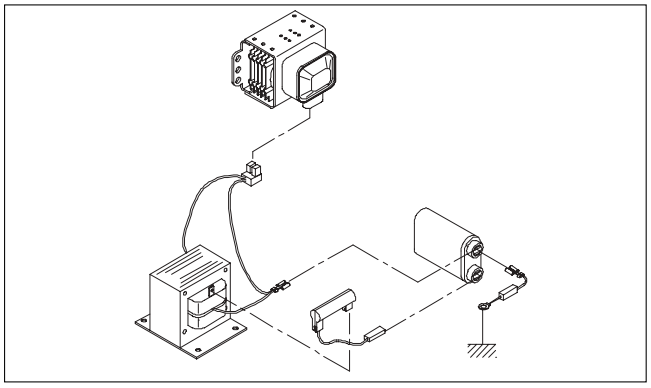
1) Remove the screw which secure the control panel, push up two snap fits and draw forward the control panel assembly.
2) Disconnect wire flat from the connector of the PCB assembly.
3) Remove four screws which secure the PCB assembly to control panel.
4) Remove the PCB from the control panel.
5) Remove the membrane, lever door open, spring button and button door open from the control panel.
6) Reverse the above steps for reassembly.

6. To remove high voltage capacitor.

1) Remove the screw which secure the grounding ring terminal of the H.V. diode and the capacitor holder.
2) Remove the H.V. diode from the capacitor holder.
3) Reverse the above steps for reassembly.

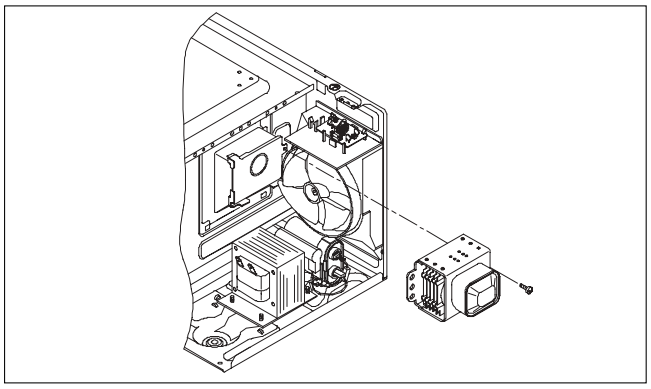


◆ High voltage circuit wiring

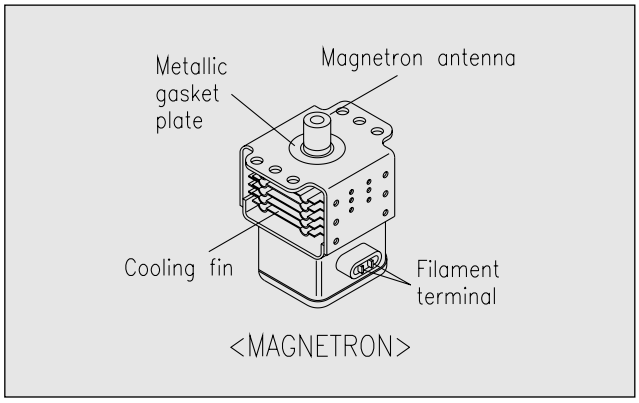


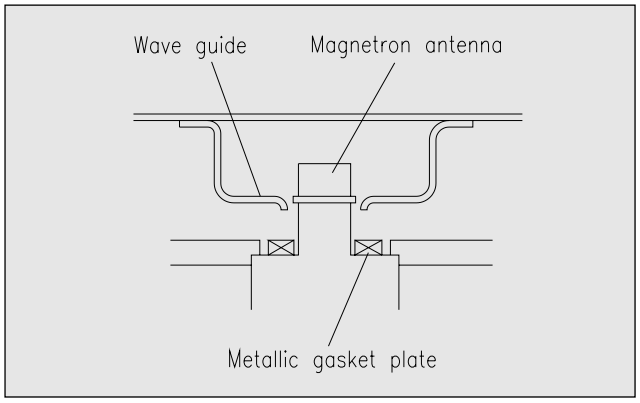
7. To remove magnetron.

1) Remove the screw which secure the magnetron.
2) Remove the magnetron.
3) Reverse the above steps for reassembly.



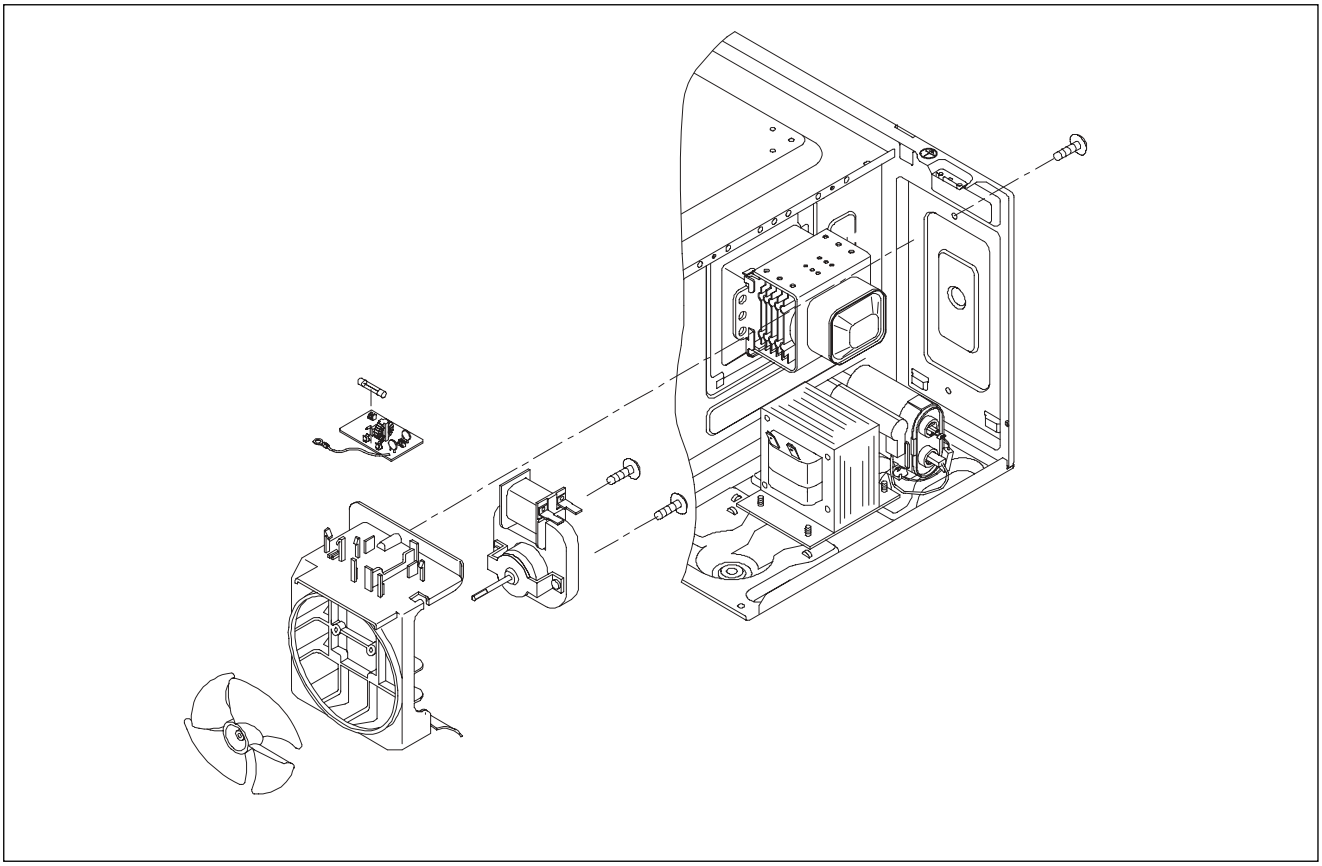
NOTE : Never install the magnetron without the metallic gasket plate which is packed with each magnetron to prevent microwave leakage. Whenever repair work is carried out on magnetron, check the microwave leakage. It shall not exceed 4mW/cm^2 for a fully assembled oven with door normally closed.





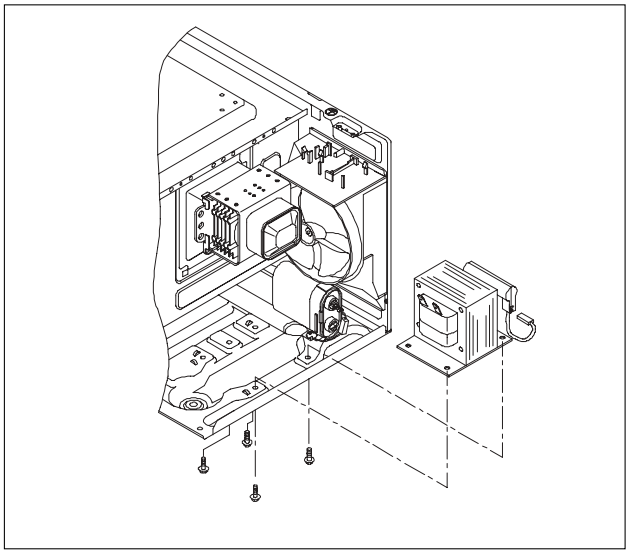
8. To remove wind guide assembly.

1) Remove the screw for earthing.
2) Remove the noise filter from the wind guide.
3) Remove the screw which secure the wind guide assembly.
4) Draw forward the wind guide assembly.
5) Pull the fan from the motor shaft.
6) Remove two screws which secure the motor shaded pole.
7) Remove the motor shaded pole.
8) Reverse the above steps for reassembly.



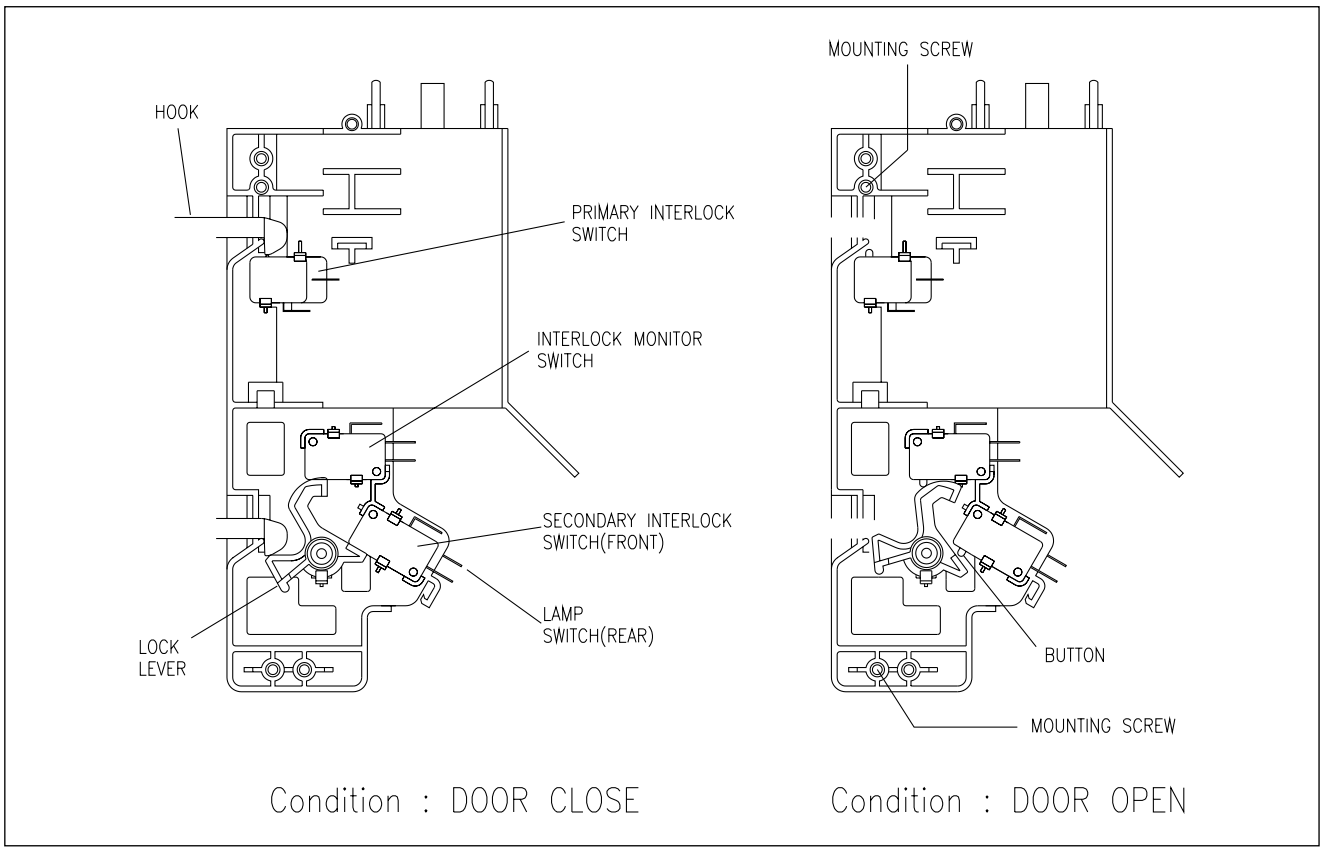
9. To remove H.V.transformer.

1) Remove four screws holding the H.V.transformer.
2) Remove the H.V.transformer.
3) Reverse the above steps for reassembly.



INTERLOCK MECHANISM AND ADJUSTMENT

The door lock mechanism is a device which has been specially designed to completely eliminate microwave radiation when the door is opened during operation, and thus to perfectly prevent the danger resulting from the leakage of microwave.



(1) Primary interlock switch

When the door is closed, the hook locks the oven door. If the door is not closed properly, the oven will not operate.
When the door is closed, the hook pushes the button of the microswitch. Then the button of the primary interlock switch bring it under “ON” condition.

(2) Secondary interlock switch and interlock monitor switch

When the door is closed, the hook pushes the lock lever downward. The lock lever presses the button of the interlock monitor switch to bring it under “OFF” condition and presses the button of the secondary interlock switch to bring it under ON condition.

ADJUSTMENT :

Interlock monitor switch

When the door is closed, the interlock monitor switch should be “OFF” condition before other switches are “ON” condition.
When the door is opened, the interlock monitor switch should be “ON” condition after other switches are “OFF” condition.

(3) Adjustment steps

a) Loosen the one mounting screw.
b) Adjust interlock switch assembly position.
Actuation distance of primary and secondary interlock switch shall be adjusted almost 0mm.
c) Make sure that lock lever moves smoothly after adjustment is completed.
d) Tighten completely a mounting screws.

NOTE :

Microwave emission test should be performed after adjusting interlock mechanism.
If the microwave emission exceed 4mW/cm^2, readjust interlock mechanism.

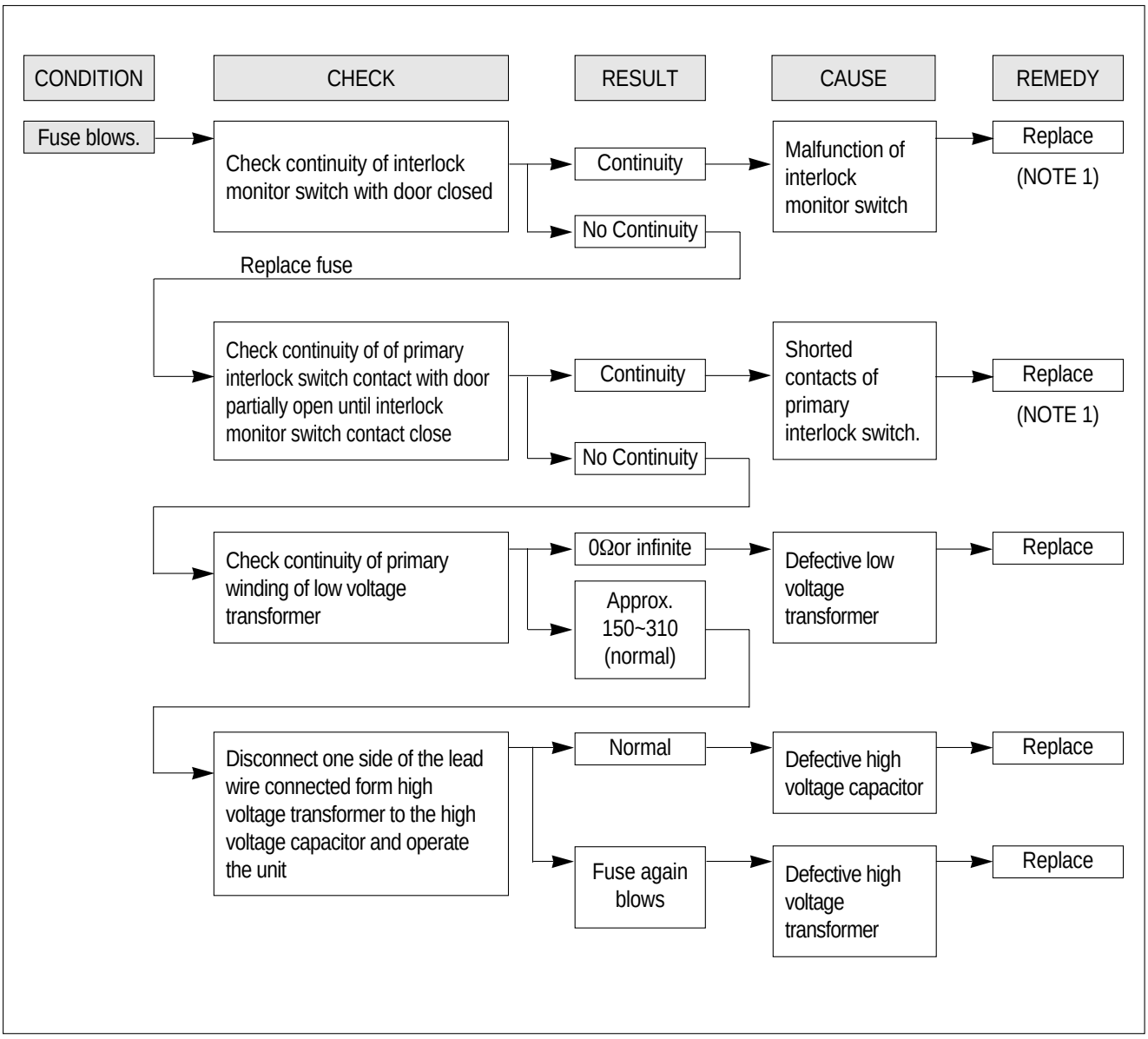
TROUBLE SHOOTING GUIDE

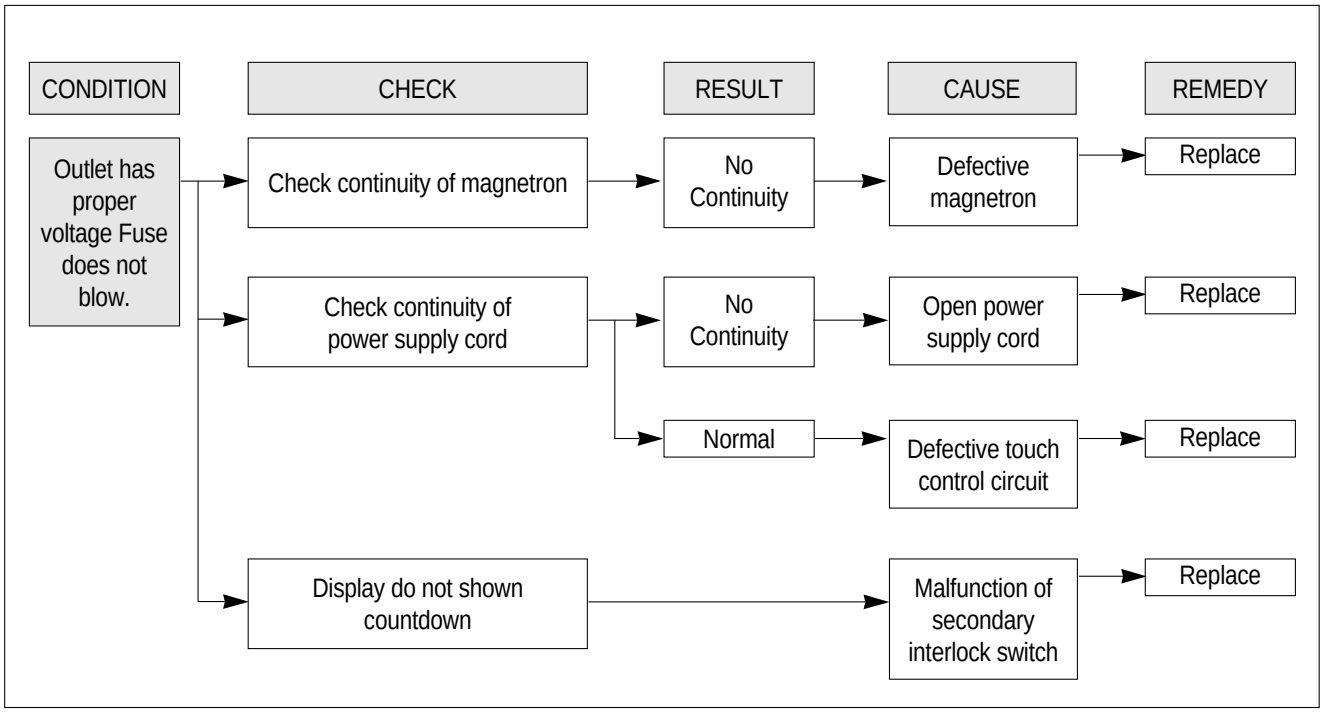
Following the procedure below to check if the oven is defective or not.

1) Check grounding before trouble checking.
2) Be careful of the high voltage circuit.
3) Discharge the high voltage capacitor.
4) When checking the continuity of the switches, fuse or high voltage tranformer, disconnect one load wire from these parts and check continuity with the AC plug removed. To do otherwise may result in a false reading or damage to your meter.

NOTE : When electric parts are checked, be sure the power cord is not inserted the wall outlet.
Check wire harness, wiring and connection of the terminals and power cord before check the parts listed below.

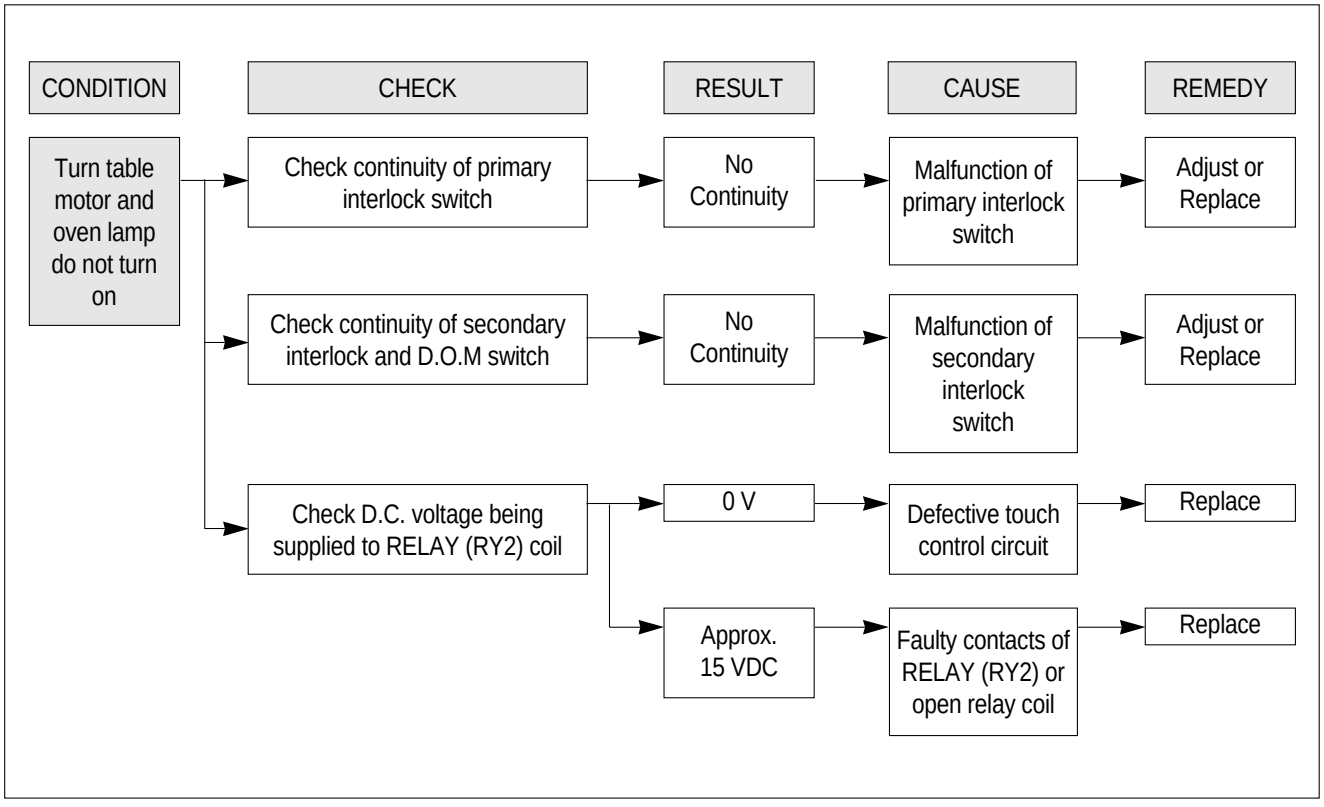
(TROUBLE 1) Oven does not operate at all : any inputs can not be accepted.



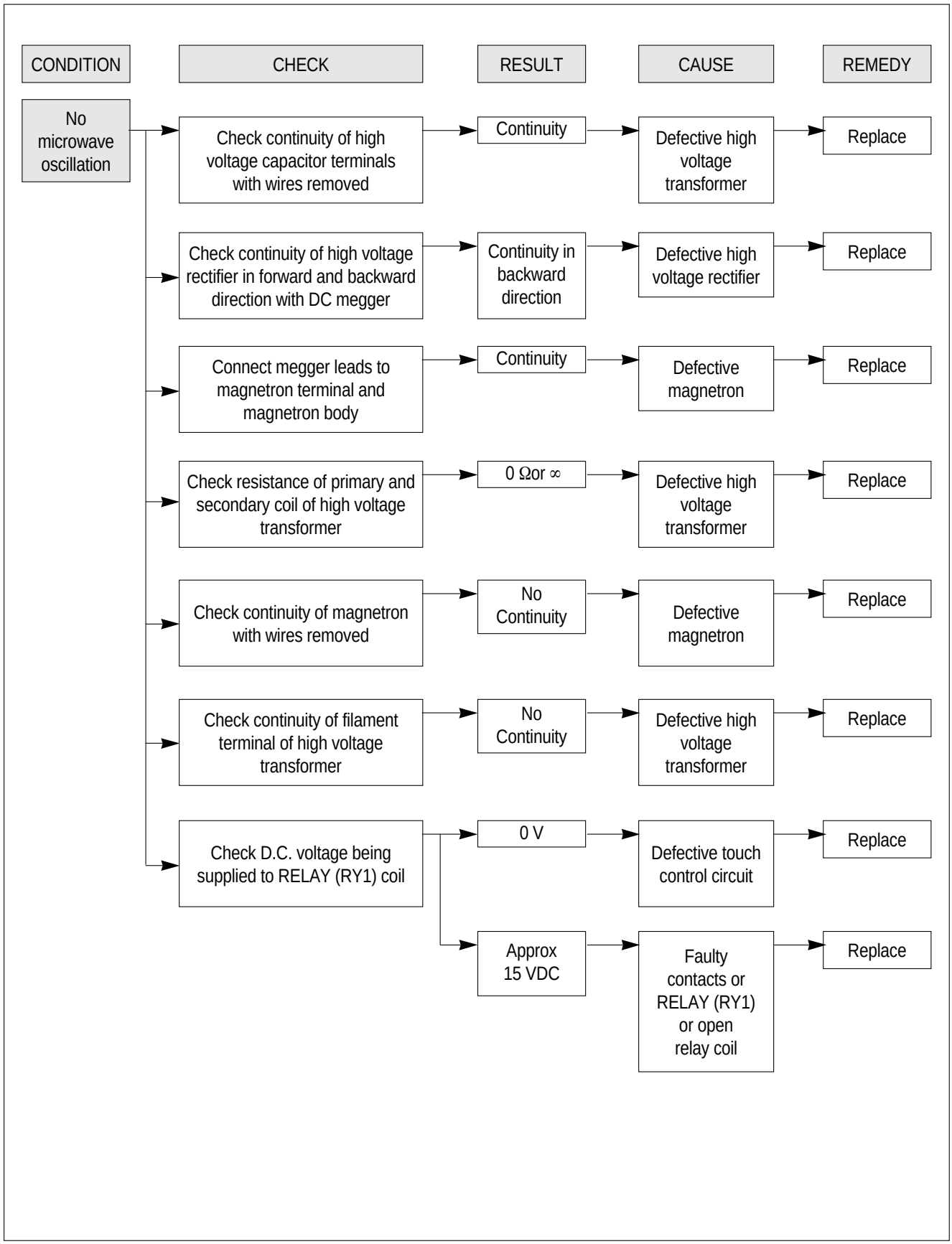


NOTE 1
All these switches must be replaced at the same time, please refer to “Interlock Mechanism And Adjustment”.

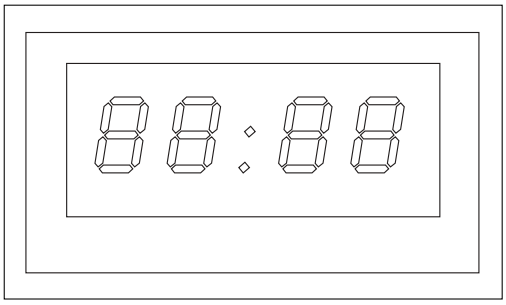
(TROUBLE 2) Display shows all figures selected, but oven does not start cooking, even though desired program and time are set and start pad is tapped.



(TROUBLE 3) No microwave oscillation even though fan motor rotates.



(TROUBLE 4) The following visual conditions indicate a probable defective touch control circuit or membrane switch assembly



1. Incomplete segments,
   1) Segments missing.
   2) Partical segments missing.
   3) Digit flickering other than normal display slight flickering.
   4) " :0" does not display when power is on.

2. A distinct change in the display are not on when they numbers is the display.

3. One or more digits in the display are not on when they should be.

4. Display indicates a number different from one touched.

5. Specific numbers (for example 2 or 3) will not display when the panel is touched.

6. Display does not count down or up with time cooking or clock operation.

7. Oven is programmable and cooks normally but no display shows.

8. Display obviously jumps in time while counting down.

9. Display counts down noticeable too fast while cooking.

10. Display does not show the time of day when the STOP/CLEAR pad is touched.

11. Oven lamp and turntable motor do not stop although cooking is finished. Check if the RELAY 2 contacts close. If they are close, replace touch control circuit.

CONDITION	CHECK	RESULT	CAUSE	REMEDY
Display does not show programming at all, even if keyboard is touched.	Check rach pad for continuity of the membrane keyboard for the following keyboard check procedure	Normal	Malfunction of touch control circuit of control box sub-assembly	Replace control box sub-assembly
		Abnormal	Malfunction of the membrane keyboard	Replace the membrane keyboard

NOTE
Before following the particular steps listed above in the trouble shooting guide for the membrane keyboard's, failure, please check for the continuity of each wire-harness between the membrane keyboard and P.C.B. assembly.

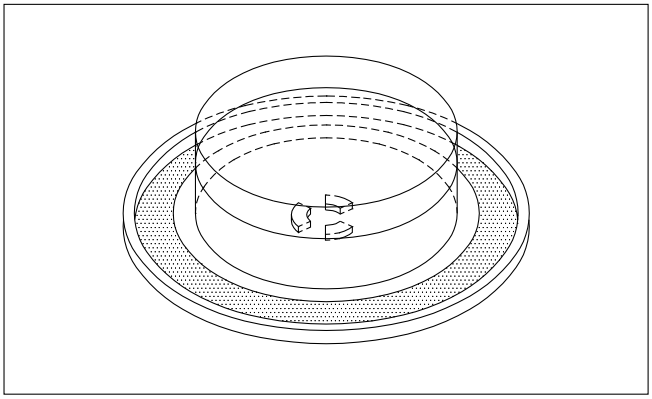
MEASUREMENT AND TEST

1. MEASUREMENT OF THE MICROWAVE POWER OUTPUT

Microwave output power can be checked by indirectly measuring the temperature rise of a certain amount of water exposed to the microwave as directed below.

PROCEDURE

1. Microwave power output measurement is made with the microwave oven supplied at rated voltage and operated at its maximum microwave power setting with a load of 1000 ± 5cc of potable water.
2. The water is contained in a cylindrical borosilicate glass vessel having a maximum material thickness of 3 mm and an outside diameter of approximately 190 mm.
3. The oven and the empty vessel are at ambient temperature prior to the start of the test. The initial temperature of the water is 10 ± 2°C (50 ± 3.6°F). If is measured immediately before the water is added to the vessel. After addition of the water to the vessel, the load is immediately placed on the center of the shelf, which is in the lowest normal position.
4. Microwave power is switched on.
5. Heating time should be exactly A seconds.
   (Refer to table as following)
   Heating time is measured while the microwave generator is operating at full power. The filament heat-up time for magnetron is not included.
6. The initial and final temperature of water is selected so that the maximum difference between the ambient and final water temperature is 5K.
7. The microwave power output P in watts is calculated from the following formula:



$$P = 4187 \times \Delta T/t$$

- ΔT is difference between initial and ending temperature.
- t is the heating time.

The power measured be B (Refer to SPECIFICATIONS) W ± 10.0 %.

CAUTION
1. Water load should be measured exactly to 1 liter.
2. Input power voltage should be exactly specified voltage (Refer to SPECIFICATIONS).
3. Ambient temperature should be 20 ± 2°C (68 ± 3.6°F)

✻ Heating time for power output:

A (second)	70	64	60	56	52	49	47	44	42	40	38
B (W)	600	650	700	750	800	850	900	950	1000	1050	1100

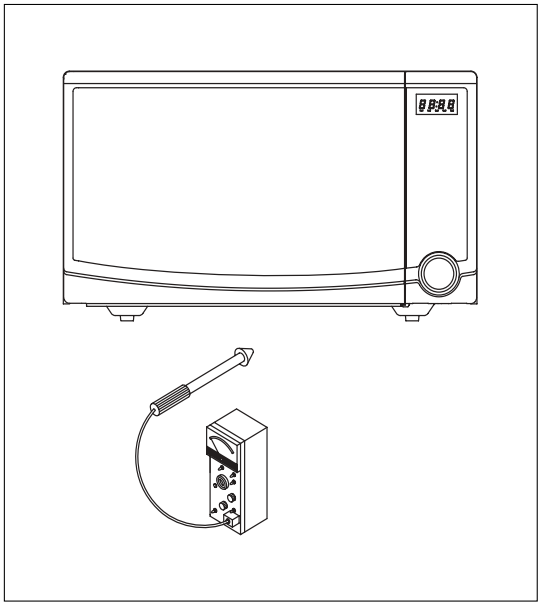
2. MICROWAVE RADIATION TEST

CAUTION

1. Make sure to check the microwave leakage before and after repair of adjustment.
2. Always start measuring of an unknown field to assure safety for operating personnel from microwave energy.
3. Do not place your hands into any suspected microwave radiation field unless the safe density level is known.
4. Care should be taken not to place the eyes in direct line with the source of microwave energy.
5. Slowly approach the unit under test until the radiometer reads an appreciable microwave leakage from the unit under the test.

PROCEDURE

1. Prepare Microwave Energy Survey Meter, 600cc glass beaker, and glass thermometer 100°C (212°F).



2. Pour 275cc ± 15cc of tap water initially at 20 ± 5°C (68 ± 9°F) in the 600 cc glass beaker with an inside diameter of approx. 95 mm(3.7 in.).

3. Place it at the center of the tray and set it in a cavity.

4. Close the door and operate the oven.

5. Measure the leakage by using Microwave Energy Survey Meter with dual ranges, set to 2450MHz.
   1) Measured radiation leakage must not exceed the value prescribed below. Leakage for a fully assembled oven with door normally closed must be less than 4mW/cm^2.
   2) When measuring the leakage, always use the 5 cm (2 in.) space cone with probe. Hold the probe perpendicular to the cabinet and door. Place the space cone of the probe on the door, cabinet, door seem, door viewing screen, the exhaust air vents and the suction air vents.
   3) Measuring should be in a counter-clockwise direction at a rate of 1 in./sec. If the leakage of the cabinet door seem is unknown, move the probe more slowly.
   4) When measuring near a corner of the door, keep the probe perpendicular to the areas making sure the probe end at the base of the cone does not get closer than 2 in. from any metal. If it does not, erroneous reading may result.

3. COMPONENT TEST PROCEDURE

- High voltage is present at the high voltage terminal of the high voltage transformer during any cooking cycle.
- It is neither necessary nor advisable to attempt measurement of the high voltage.
- Before touching any oven components or wiring, always unplug the oven from its power source and discharge the capacitor.

1. High voltage transformer

1) Remove connections from the transformer terminals and check continuity.
2) Normal readings should be as follows :
   Secondary winding ... Approx. 110 Ω±10%
   Filament winding ... Approx. 0 Ω
   Primary winding ... Approx. 1 Ω

2. High voltage capacitor

1) Check continuity of capacitor with meter on the highest OHM scale.
2) A normal capacitor will show continuity for a short time, and then indicate 10MΩonce the capacitor charged.
3) A shorted capacitor will show continuous continuity.
4) An open capacitor will show constant 10MΩ
5) Resistance between each terminal and chassis should be infinite.

3. High voltage diode

1) Isolate the diode from the circuit by disconnecting the leads.
2) With the ohmmeter set on the highest resistance scale measure the resistance across the diode terminals. Reverse the meter leads and again observe the resistance reading. Meter with 6V, 9V or higher voltage batteries should be used to check the front-back resistance of the diode, otherwise an infinite resistance may be read in both directions. A normal diode's resistance will be infinite in one direction and several hundred k Ωin the other direction.

4. Magnetron

For complete magnetron diagnosis, refer to "Measurement of the Microwave Power Output." Continuity checks can only indicate and open filament or a shorted magnetron. To diagnose for an open filament or a shorted magnetron,
1) Isolate magnetron from the circuit by disconnecting the leads.
2) A continuity check across magnetron filament terminals should indicate 0.1 Ωor less.
3) A continuity check between each filament terminal and magnetron case should read open.

5. Fuse

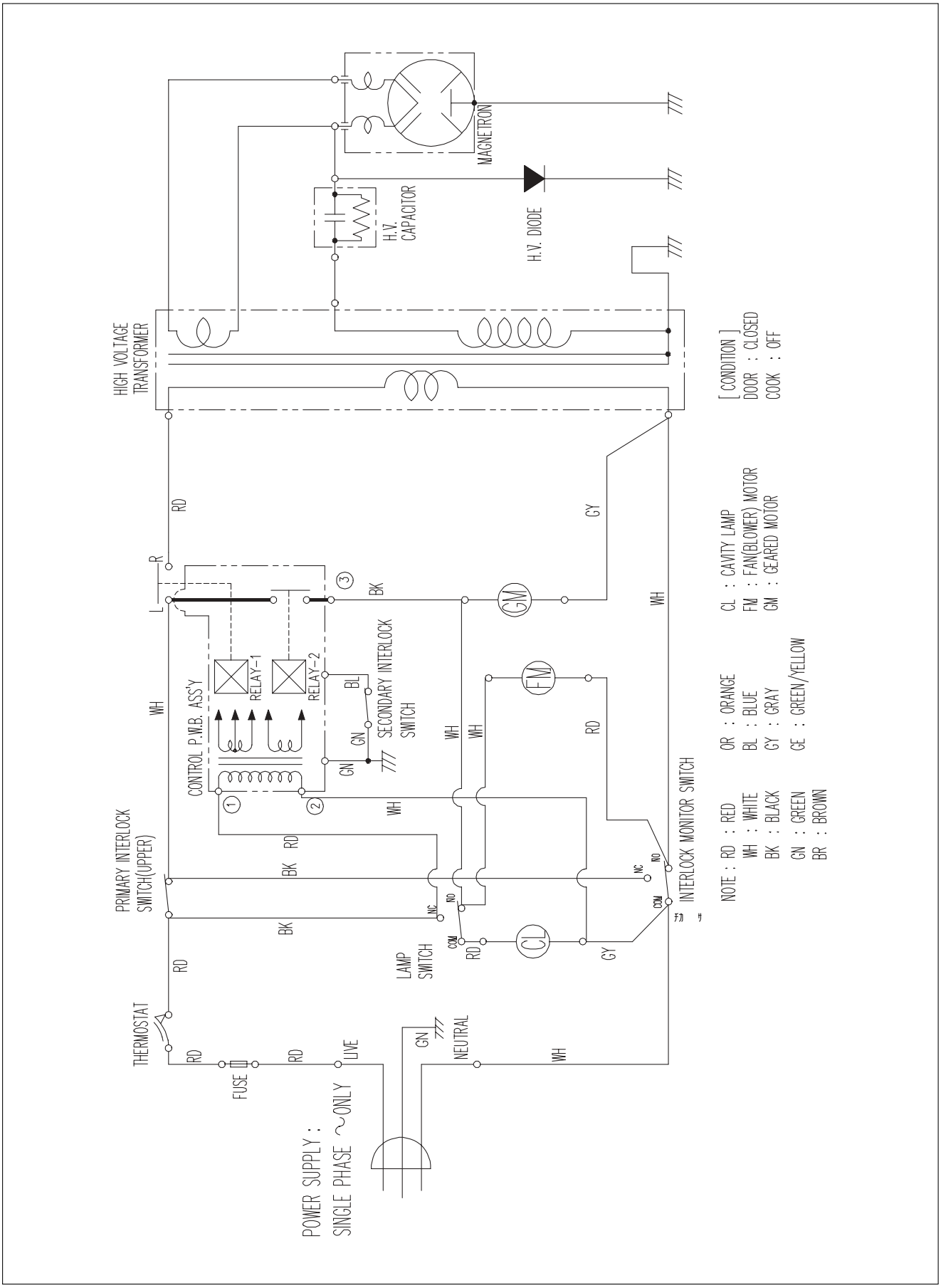
If the fuse in the primary and monitor switch circuit is blown when the door is opened, check the primary and monitor switch before replacing the blown fuse. In case the fuse is blown by an improper switch operation, replace the defective switch and fuse at the same time. Replace just the fuse if the switches operate normally.

6. Interlock switches

(1) You can test continuity of safety interlock and monitor switch by using ohmmeter.
(2) The switch operation is checked by zero/unlimited.
   The meter should indicate zero resistance.
(3) The sequence of check is interlock monitor switch, primary and secondary interlock switches check.

WIRING DIAGRAM

KOR-187H



1. CIRCUIT CHECK PROCEDURE

1. Low voltage transformer check

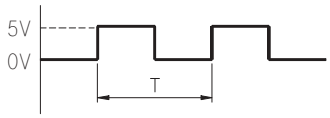
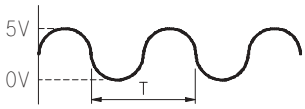
The low voltage transformer is located on the P.C.B.
Measuring condition: Input voltage: 120V / Frequency: 60Hz

Terminal Voltage	LOAD	NO LOAD
5-6-7	AC 12.6 V	AC 14.7 V

NOTE
1. Refer to Circuit Diagram.
2. Secondary side voltage of the low voltage transformer changes in proportion to fluctuation of power source voltage.
3. The allowable tolerance of the secondary voltage is within ± 5% of nominal voltage.

2. Voltage Check

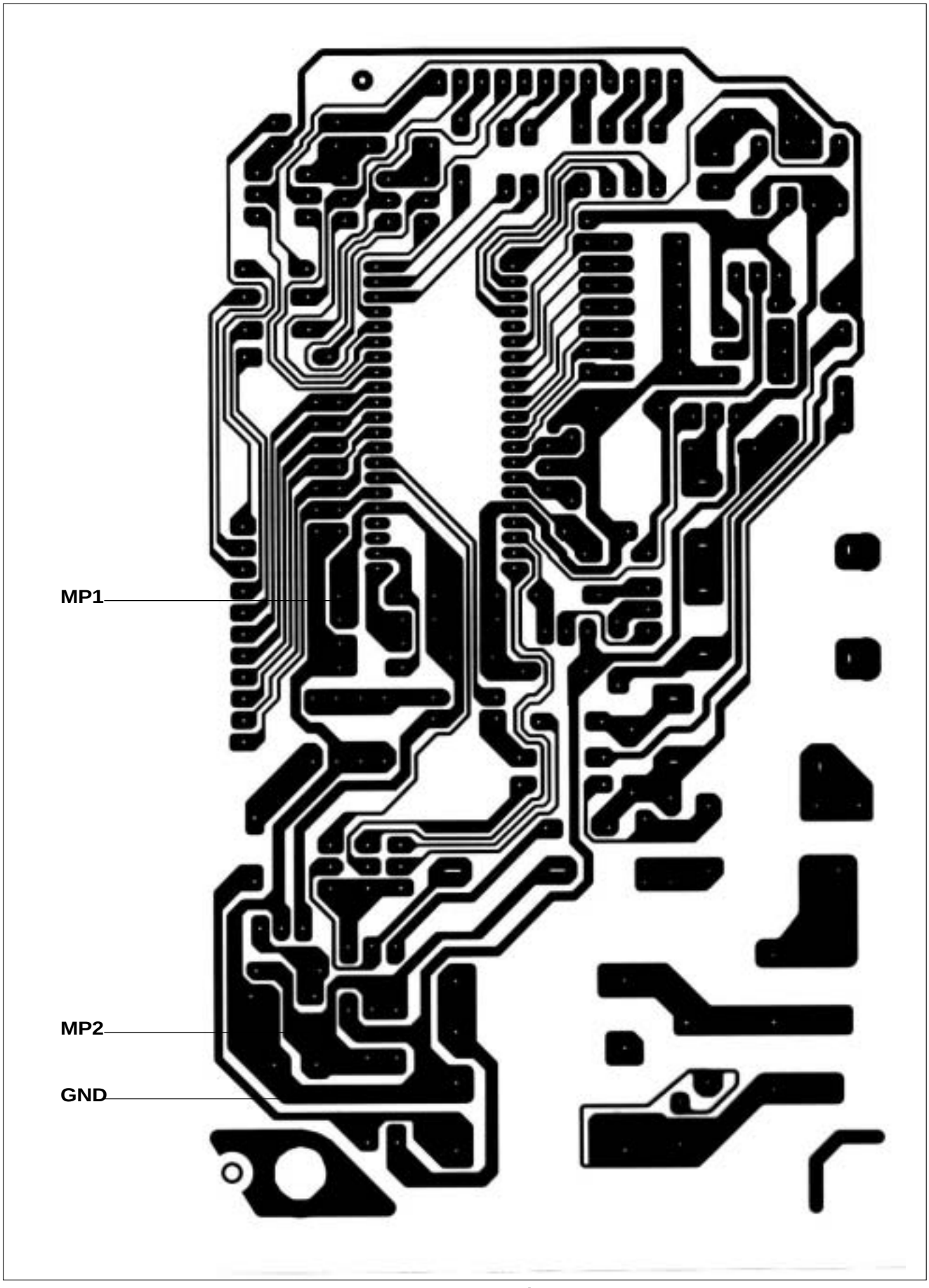
- Key check point

NO	CHECK POINT	REMARK
1	IC1 PIN 5	5VDC
2	IC1 PIN 8	 T : 16.67ms(60Hz)
3	IC1 PIN 35 OR PIN 36	 T : 250 ns(4MHz)

- Check method

NO	MEASURE POINT	WAVE FORM	REMEDY	REMARK
1	MP1	DC 5V±0.25V	Replace VL1, EC1	NO LOAD
2	MP2	DC 12V±2.0V	Replace EC2, D11, D13, D14	NO LOAD

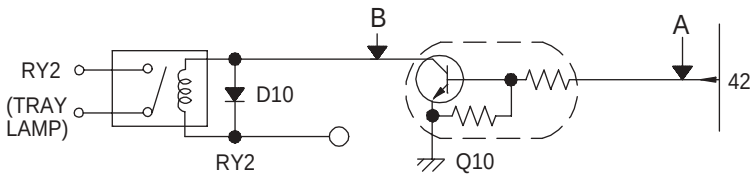
NOTE
Each measure point must be measured with GND points.



Measurement point

3. When there is no microwave oscillation

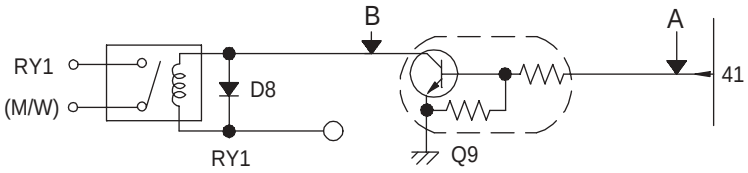
1) When touching the **START** pad, oven lamp does not turn on.
Fan motor do not rotate, but cook indicator in display comes on.



- Check method

STATE \ POINT	A	B
RELAY 2 ON	5VDC	GND
RELAY 2 OFF	GND	15VDC

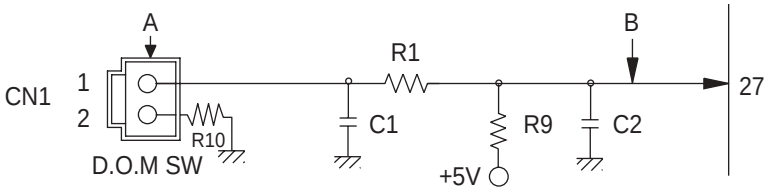
2) When touching the **START** pad, oven lamp turns on.
Fan motor and turntable rotate and cook indicator in display comes on.



- Check method

STATE \ POINT	A	B
RELAY 1 ON	5VDC	GND
RELAY 1 OFF	GND	15VDC

4. When the door is opened during operation, the count down timer does not stop.

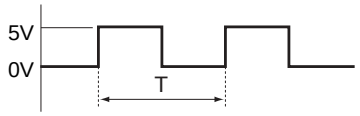


-Check method

STATE \ POINT	A	B
1) DOOR OPEN	OPEN	5VDC
2) DOOR CLOSED	CLOSE	GND

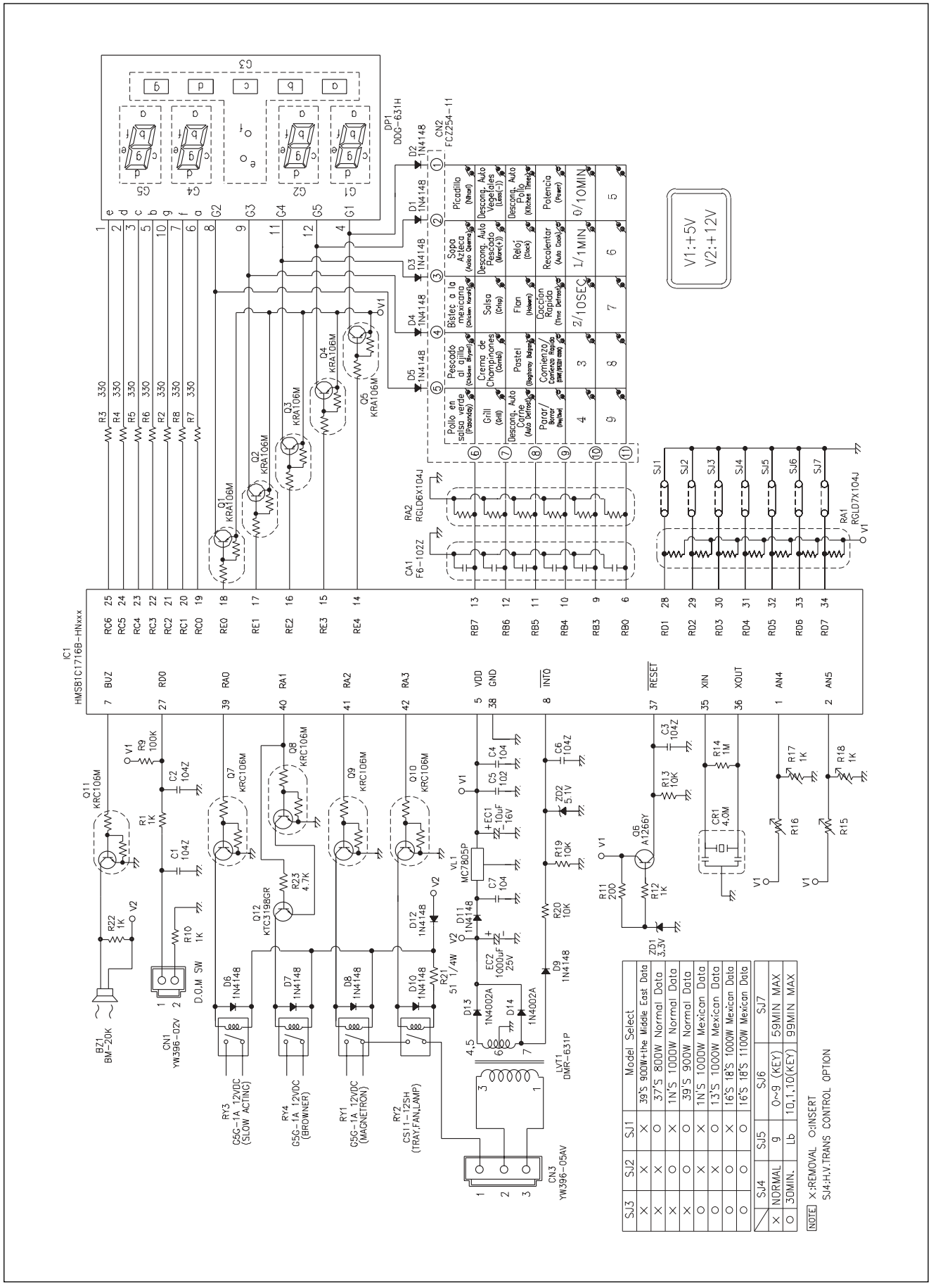
CHECK NO	METHOD	REMEDY
1	Check the stage (ON, OFF) of the door open monitor switch by resistance measurement.	Replace door open monitor switch.

5. When the digital clock does not operate properly.
→ refer to Circuit Diagram

POINT	WAVE FORM
IC 1 PIN 8	 T:16.67ms(60Hz)

* If clock does not keep exact time, you must check resistor R20 and zener diode ZD2.

KOR-178H


V1:+5V
V2:+12V
Pollo en salsa verde (Pasanoo)
Pescado al ajillo (Seafood Bayou)
Bistec a la mexicana (Mexican Flavor)
Picadillo (Mince)
Grill (Grill)
Crema de Champiñones (Cream)
Salsa (Chop)
Descong. Auto Pescado (Meat+Fi)
Descong. Auto Carne (Auto Defrost)
Pastel (Beginners Bake)
Flan (Heaven)
Reloj (Clock)
Parar/ Borrar (Stop/Del)
Comienzo/ Cocción Rápida (Time Defrost)
Recalentar (Auto Cook)
Descong. Auto Vegetales (Least-/)
Descong. Auto Pollo (Kitchen Timer)
Potencia (Power)
0/10MIN
1/1MIN
2/10SEC
Model Select
39'S 900W+the Middle East Data
37'S 800W Normal Data
1N'S 1000W Normal Data
39'S 900W Normal Data
1N'S 1000W Mexican Data
13'S 1000W Mexican Data
16'S 18'S 1000W Mexican Data
16'S 18'S 1100W Mexican Data
SJ3
SJ2
SJ1
SJ4
NORMAL
30MIN.
SJ5
g
Lb
SJ6
0~9 (KEY)
10,1,10(KEY)
SJ7
59MIN MAX
99MIN MAX
NOTE X:REMOVAL O:INSERT
SJ4:H.V.TRANS CONTROL OPTION

KOR-178H

NO	NAME	SYMBOL	SPECIFICATION	PART CODE	Q'TY
1	BUZZER	BZ1	BM-20K	3515600100	1
2	C ARRAY	CA1	7P(6) 1000PF M 50V	CN6XB-102M	1
3	CAPACITOR ELEC	EC1	50V RS 10UF	CEXE1H100A	1
4	CAPACITOR ELEC	EC2	25V RSS 1000MF	CEXF1E102V	1
5	CONNECTOR WAFER	CN1	YW396-02V	3519150520	1
6	CONNECTOR WAFER	CN2	FCZ 254-11	441M367160	1
7	CONNECTOR WAFER	CN3	YW396-05AV	3519150510	1
8	DIODE RECTIFY	D1~5,D8~D12	1N4148	DZN4148---	10
9	DIODE RECTIFY	D13,14	KN4004A	DZN4004A--	2
10	DIODE ZENER	ZD1	UZ- 3.3BSB 1/2W	DZUZ3R3BSB	1
11	DIODE ZENER	ZD2	UZ- 5.1BSB 1/2W	DZUZ5R1BSB	1
12	LED DISPLAY	DP1	TOF-4461BG-B10	DT0F4461BG	1
13	PCB MAIN	M338	81.5X139.9	3514315430	1
14	R ARRAY	RA1	8P(7) 1/8 100K OHM J	RA-88X104J	1
15	R ARRAY	RA2	7P(6) 1/8 100K OHM J	RA-87X104J	1
16	RESISTOR	R2~8	1/6W 330 5%	RD-AZ331J-	7
17	RESISTOR	R1,10,12,17,18,22	1/6W 1K 5%	RD-AZ102J-	6
18	RESISTOR	R13,R19,20	1/6W 10K 5%	RD-AZ103J-	3
19	RESISTOR	R9	1/6W 100K 5%	RD-AZ104J-	1
20	RESISTOR	R11	1/6W 200 5%	RD-AZ201J-	1
21	RESISTOR	R14	1/6W 1M 5%	RD-AZ105J-	1
22	RESISTOR	R21	1/4W 51 5%	RD-4Z510J-	1
23	RESONATOR CERA	CR1	CRT 4.00MS	5P4R00MTS-	1
24	IC REGULATOR	VL1	MC7805C	1CPMC7805C	1
25	TRANSISTOR	Q1~5	KRA106M	TZRA106M--	5
26	TRANSISTOR	Q9~11	KRC106M	TZRC106M--	3
27	TRANSISTOR	Q6	KTA-1266Y	TZTA1266Y-	1
28	CAPACITOR CERA	C5	102 50V Z AXIAL	CCZB1H102K	1
29	CAPACITOR CERA	C1~4,C6~7	104 50V Z AXIAL	CCZF1H104Z	6
30	TRANS POWER	LVT1	DMR-631P	5EPU035302	1
31	WIRE COPPER	J1~J10,J13,J14	1/0.52 TIN COATING	85801052GY	12
32	WIRE COPPER	SJ2,SJ3,SJ4	1/0.52 TIN COATING	85801052GY	3
33	WIRE COPPER	J11,J12	1/0.52 TIN COATING	85801053GY	2
34	SW RELAY	RY1	G5G-1A DC12V	5SC0101121	1
35	SW RELAY	RY2	OJ-SS-112LM 1C 1P	5SC0101404	1
36	IC MICOM	IC1	HMS81C1716B-HNXXX	150LC1716B	1

EXPLODED VIEW AND PARTS LIST

KOR-178HW, KOR-178HS

1. DOOR ASSEMBLY

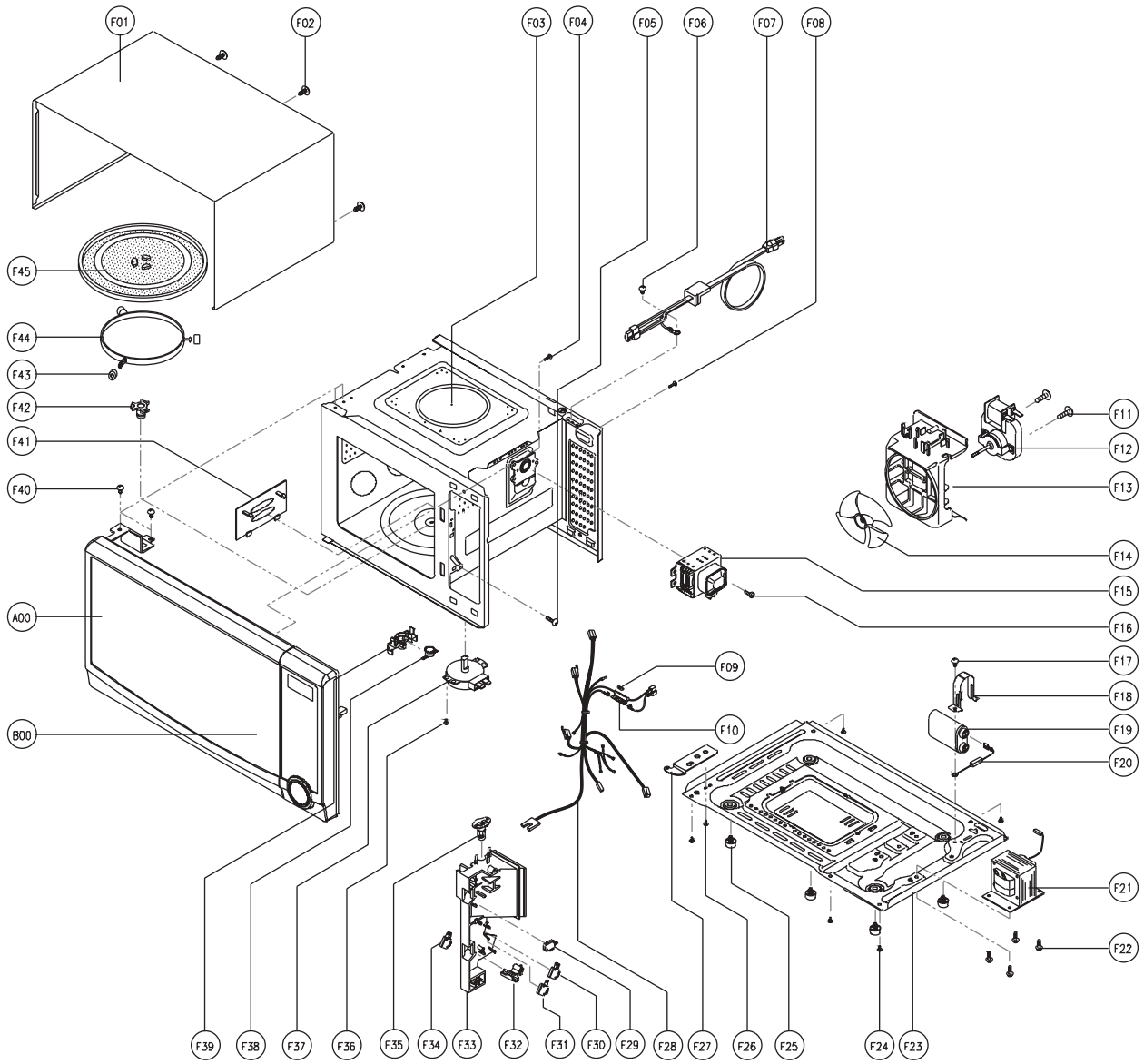
Refer to Disassembly and assembly

2. CONTROL PANEL ASSEMBLY

Refer to Disassembly and assembly

3. TOTAL ASSEMBLY

KOR-168H9A27 / KOR-168H9A52



1) KOR-178HW

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY
A00	3511710540	DOOR AS	KOR-168H9A27	1
B00	PKCPSWXM10	CONTROL-PANEL AS	KOR-168H9A27	1
F01	3510805600	CABINET AS	KOR-161G0A LOUVER	1
F02	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	4
F03	3516109800	CAVITY AS	KOR-161H0A	1
F04	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1
F05	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1
F06	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1
F07	35113UANT5	CORD POWER AS	3X14AWG 60X60 120-RTML	1
F08	3516004100	SPECIAL SCREW	T1 TRS LR4 POLE 4X10 MFZN	1
F09	5F1CD0202S	FUSE	MF61 20A 250V TL	1
F10	3513002720	HOLDER FUSE	PP GP-3156F	1
F11	7121403011	SCREW TAPPING	T2S PAN 4X30 MFZN	2
F12	3963822720	MOTOR SHADED POLE	120V 60HZ MW15XA-K04	1
F13	3512514200	GUIDE WIND	PP	1
F14	3511800100	FAN	P.P GF20	1
F15	3518003420	MAGNETRON	RM228JFP 6CF	1
F16	3516003800	SPECIAL SCREW	T2 FLANGE 5X8 MFZN	1
F17	7122400811	SCREW TAPPING	T2S TRS 4*8 MFZN	1
F18	3513003200	HOLDER HV CAPACITOR	SECC T0.5	1
F19	3518302201	CAPACITOR HV	2100VAC 0.98UF #187 75MM	1
F20	3518400400	DIODE HV	HVR-1X-3AB 12KV #187	1
F21	3518114530	TRANS HV	DWAR10A0-16T S	1
F22	3516003700	SPECIAL SCREW	TT3 HEX 4X8 FLG MFZN	4
F23	3510311800	BASE	SBHG T0.8	1
F24	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	5
F25	3512101400	FOOT	DASF-310	4
F26	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	1
F27	3515204500	STOPPER HINGE *U AS	KOR-162J0A	1
F28	3512714601	HARNESS MAIN	KOR-161H0A	1
F29	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1
F30	4415A66600	SW MICRO	VP-532A-OF SPNC #187 200G	1
F31	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1
F32	3513701300	LEVER LOCK	POM	1
F33	3513807600	LOCK	POM	1
F34	4415A66910	SW MICRO	VP-531A-OF/SZM-V16-FA-61	1
F35	3513601500	LAMP	BL 125V 25W T25 C5A H187	1
F36	7121400611	SCREW TAPPING	T2S PAN 4X6 MFZN	1
F37	3966820200	MOTOR SYNCRO	120V 2W GM-16-12F17	1
F38	3518905300	THERMOSTAT	OFF:75 ON:65 H #187 NB	1
F39	3513003410	HOLDER THERMOSTAT	PP(BK)	1
F40	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	2
F41	3511406200	COVER WAVE GUIDE	HEATPROOF PP	1
F42	3517400600	COUPLER	XAREC	1
F43	3514700710	ROLLER	TEFLON	3
F44	3512517200	GUIDE ROLLER	PP	1
F45	3517207600	TRAY	DIA:340 1300G	1

2) KOR-178HS

REF. NO	PART CODE	PART NAME	DESCRIPTION	Q'TY
A00	3511710550	DOOR AS	KOR-168H9A52	1
B00	PKCPSWXM40	CONTROL-PANEL AS	KOR-168H9A52	1
F01	3510802440	CABINET	T0.6 SV 14012	1
F02	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	4
F03	3516109800	CAVITY AS	KOR-161H0A	1
F04	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1
F05	7122401211	SCREW TAPPING	T2S TRS 4X12 MFZN	1
F06	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	1
F07	35113UANT5	CORD POWER AS	3X14AWG 60X60 120-RTML	1
F08	3516004100	SPECIAL SCREW	T1 TRS LR4 POLE 4X10 MFZN	1
F09	5F1CD0202S	FUSE	MF61 20A 250V TL	1
F10	3513002720	HOLDER FUSE	PP GP-3156F	1
F11	7121403011	SCREW TAPPING	T2S PAN 4X30 MFZN	2
F12	3963822720	MOTOR SHADED POLE	120V 60HZ MW15XA-K04	1
F13	3512514200	GUIDE WIND	PP	1
F14	3511800100	FAN	P.P GF20	1
F15	3518003420	MAGNETRON	RM228JFP 6CF	1
F16	3516003800	SPECIAL SCREW	T2 FLANGE 5X8 MFZN	1
F17	7122400811	SCREW TAPPING	T2S TRS 4*8 MFZN	1
F18	3513003200	HOLDER HV CAPACITOR	SECC T0.5	1
F19	3518302201	CAPACITOR HV	2100VAC 0.98UF #187 75MM	1
F20	3518400400	DIODE HV	HVR-1X-3AB 12KV #187	1
F21	3518114530	TRANS HV	DWAR10A0-16T S	1
F22	3516003700	SPECIAL SCREW	TT3 HEX 4X8 FLG MFZN	4
F23	3510311800	BASE	SBHG T0.8	1
F24	7112401011	SCREW TAPPING	T1 TRS 4*10 MFZN	5
F25	3512101400	FOOT	DASF-310	4
F26	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	1
F27	3515204500	STOPPER HINGE *U AS	KOR-162J0A	1
F28	3512714601	HARNESS MAIN	KOR-161H0A	1
F29	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1
F30	4415A66600	SW MICRO	VP-532A-OF SPNC #187 200G	1
F31	4415A17352	SW MICRO	VP-533A-OF SPNO #187 200G	1
F32	3513701300	LEVER LOCK	POM	1
F33	3513807600	LOCK	POM	1
F34	4415A66910	SW MICRO	VP-531A-OF/SZM-V16-FA-61	1
F35	3513601500	LAMP	BL 125V 25W T25 C5A H187	1
F36	7121400611	SCREW TAPPING	T2S PAN 4X6 MFZN	1
F37	3966820200	MOTOR SYNCRO	120V 2W GM-16-12F17	1
F38	3518905300	THERMOSTAT	OFF:75 ON:65 H #187 NB	1
F39	3513003410	HOLDER THERMOSTAT	PP(BK)	1
F40	7272400811	SCREW TAPTITE	TT3 TRS 4X8 MFZN	2
F41	3511406200	COVER WAVE GUIDE	HEATPROOF PP	1
F42	3517400600	COUPLER	XAREC	1
F43	3514700710	ROLLER	TEFLON	3
F44	3512517200	GUIDE ROLLER	PP	1
F45	3517207600	TRAY	DIA:340 1300G	1

DAEWOO ELECTRONICS CORP.
1-2, Jeo-dong 1(il)-ga, Jung-gu, Seoul, Korea
C.P.O. BOX 8003 SEOUL, KOREA
TELEX: DWELEC K28177-8
CABLE: “DAEWOOELEC”

S/M NO. : R161G0A001

PRINTED DATE: Jul. 2009